Empirical Validation of the Arizona Risk/Needs Instrument and Assessment Process

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Executive Summary

There are two primary goals to the use of formal risk/needs assessment instruments. The first goal is to provide greater validity, structure and consistency to the assessment and decision making process in risk and needs assessment. The second goal is to more efficiently allocate resources by targeting the most intensive/intrusive interventions to the most high-risk offenders according to their individual needs.

Predictive devices such as risk assessment can help in making decisions about disposition and service allocation, but they also are subject to error that must be addressed through careful review. The greatest limitation is that prediction methods are developed and validated with respect to specific criteria, using available data on client characteristics from a specific jurisdiction, and involving a specific time period. Thus any generalizations to other populations, jurisdictions, or time periods must be questioned.

Research suggests that there is a core set of factors that appear repeatedly, if not universally, on empirically validated risk assessment instruments (these are school problems, age at first referral, drug/alcohol use, family problems/parent control, and number of prior complaints). Other factors have also been shown to increase the prediction or classification power of the instruments in some jurisdictions, but not in others. Therefore, an instrument developed in one site or at one point in time may not be transferable to another without subsequent validation.

A great deal of discussion has evolved around whether risk assessment can predict violent behavior, and whether seriousness of offense is correlated with subsequent seriousness. Risk research has usually found that the seriousness of the current offense is not highly correlated with, and is often inversely related to, a negative outcome. Because the base rate of juveniles who go on to commit violent offenses is so low, it is difficult to predict with statistical certainty those characteristics that serve to discriminate between those who do, and those who do not, go on to commit violent offenses. Consequently, most instruments use more general outcome measures such as subsequent arrest or adjudication.

Risk assessment instruments often go beyond assessing the offenders likelihood of recidivism, and include items driven by policy considerations and case planning. Items driven by policy considerations include the concept of "just desserts," individual accountability and public sensitivity. Such items may encompass previous and current offense severity. Sometimes, these items are given greater weight than the predictive factors. Items driven by case planning requirements include substance abuse patterns, suicidal tendencies, history of childhood abuse, etc., that would indicate the need for certain types of treatment or services.

The Approach to Validating the Arizona Risk/Needs Assessment Instrument

Validation of the current Arizona Risk/Needs Assessment Instrument was based on data for juveniles active in the justice system from October 1, 1995 to October 1, 1997. The data were extracted from the Juvenile On-Line Tracking System (JOLTS). Initial analysis found the data to be biased in favor of high-risk juveniles because probation officers in about one-half of the 15

Arizona counties are more likely to complete the instrument for juveniles who have a prior complaint. The under-reporting of low-risk cases means that the resulting risk assessment will be applied to a population that is lower risk than that which it was derived from.

Empirical validation of the risk assessment portion of the instrument followed six steps recommended in the literature as necessary to the successful development and implementation of any prediction study:

1. The outcome variable was operationalized as a subsequent complaint within 365 days of the current offense.

2. A set of potentially predictive items was specified to include all of those items available on the current Arizona Risk/Needs Assessment Instrument as recorded in the JOLTS.

3. Tests for bivariate relationships between the outcome variable (subsequent complaint within 365 days) and the individual predictor variables were conducted using a random sample of all juveniles active in the Arizona Juvenile Court system from October 1, 1995 to October 1, 1996. The data cutoff was October 1, 1997, providing at least one full year of follow-up data for each juvenile.

4. Based on the extent of missing data and the results of the bivariate relationships, the number of predictor variables was reduced to include only those which were significantly related to the outcome, and which were consistently reported (less than 10% of missing data). This reduced set of variables was entered in a stepwise logistic regression equation, using the same random sample as above, to determine a reduced set of best predictors. These predictors were then entered simultaneously into a logistic regression procedure to determine the maximum likelihood coefficients associated with each statistically significant predictor.

5. A unit weighting procedure based on the logistic regression equation was compared for its ability to produce a simplified scoring procedure. The current method of classification, probation officer judgments of juvenile's risk for subsequent complaint, predicted probabilities using the maximum likelihood coefficients produced by the logistic regression equation and the simplified scoring procedure were then compared. This step in the analysis was conducted on an independent random sample of juveniles (the validation sample). Using the estimation procedures developed on one sample (the estimation sample) with an independent sample (the validation sample) is referred to as cross-validation. Without it, there can be little confidence in the utility of the prediction method.

6. Contextual issues that would affect implementation of a structured risk/needs assessment instrument such as perceptions around usefulness and utility were assessed via a survey of randomly selected juvenile court judges and probation officers in Arizona. The sample was stratified by county and was selected to be representative of the urban/rural distribution of the juveniles (i.e., 70% of probation officers were chosen from urban counties and 30% from rural counties).

The Findings

The research found that the current assessment methods are less accurate at predicting risk than are the probation officer's judgments. This is a result of the items that are included in the scoring formula. These items were based on NCCD research that was conducted on a sample of first referral juveniles that were active over a three-month period in 1993, thus the sample may not have been representative of the population, and the findings may be out-of-date. The current system employs a complex scoring procedure that is not well understood by probation officers and judges, and is subject to considerable error. For instance, it was determined that a juvenile can receive a score of zero, indicating the lowest level of risk, in situations in which the probation officer is unable to rate the predictive items due to a lack of information about the juvenile. The NCCD risk score is intended for juveniles on their first referral, but is in fact calculated for some juveniles with a number of referrals greater than one. A second risk prediction method currently in use if called the Post Adjudication Score. Revised scoring criteria indicating items that had greater predictive efficacy were suggested for the post adjudication risk score but the recommendations were never implemented. The probation officers' ratings perform better in terms of rating risk than the current empirical assessment system, however, they are not completely independent of the current assessment, as they complete the risk assessment instrument prior to arriving at their rating. This gives the probation officers the benefit of having structured information on each case.

The current system has facilitated the collection of a large amount of data on each juvenile that is easily accessible for purposes of validation research. Subsequent analysis to determine a set of items that were most predictive of risk, produced results that were consistent with the literature and with the opinions of the probation officers. For instance, the items that were most predictive for the first referral population, in order of predictive ability are: (1) recent drug use, (2) truancy and extensive absenteeism from school, (3) frequent and intense conflict with family, alienated or assaultive family relationships, (4) prior assaultive behavior, and (5) type of current offense. This is not to imply that the remaining items on the current risk/needs assessment instrument are not important in assessing a juvenile's need for treatment, or to assess danger to themselves or society, but these five items provide the most efficient and effective avenue to predict risk for subsequent offense within one year of the current offense for the population of juveniles with one referral. This analysis separated the juveniles into three groups, based on their number of referrals. The fact that number of prior complaints was held constant is one reason why it was not found to be predictive of subsequent offense for the first or second referral population. Three of the items, drug use, school attendance, and relationship with family, were found to be the most predictive variables for all three groups of juveniles analyzed -- 1st, 2nd and 3 or more referrals. Additional variables that were significant predictors for the 2nd referral group were not being enrolled in school on a regular basis, and behavior problems and mental health issues of the juvenile. For the group with three or more referrals, delinquent friends, number of prior complaints, and known or suspected runaway episodes were determined to be predictive.

The validation study has shown that by revising the scoring instrument, risk can be predicted with greater precision than is provided by the current system or by relying on the judgment of probation officers. The superiority of the proposed method to differentiate juveniles by level of risk is especially apparent when considering gender, age, and racial or ethnic subgroups of

juveniles. The current system is also not designed to assess juveniles with more than one referral, but who have not been adjudicated, thus neglecting a large number of juveniles from the risk assessment process. These individuals currently receive a score of zero, which makes them appear low risk. Another benefit of revising the system as recommended in this report, is that it would allow the calculation of the likelihood in percentage terms that each juvenile, regardless of adjudication or number of referrals, will receive a subsequent complaint within 365 days. For instance, the likelihood of a youth with one referral being referred within 365 days, who has used drugs within the past year, and who has a history of being assaultive, but who does not have a truancy problem, or a problem with family relationships, and who has committed a status offense is 59.4%.

Probation Officer Opinions and Consistency in Completing the Risk/Needs Assessment Instrument

Almost all probation officers surveyed reported that they complete the risk/needs assessment instrument for every juvenile. This is contradictory to the analysis of the data from the JOLTS, which found a large amount of missing data. Probation officers said they understood how to complete the current instrument and that the policies and procedures for completing it were clear, but many said they did not understand the scoring system and that it often required data that were not available. Just about all probation officers received training on the instrument, but only one-to-two hours of training. While all completed the instrument, the majority does not use it in making decisions. Instead, they rely on their personal knowledge of the juvenile and the family. They do not use it because they say it does not contain enough information (due to the yes and no response format) and because they believe the scoring is not accurate. They often override it and when they do, they tend to rate the juvenile higher risk.

The main factors that probation officers identified as detracting from successful use of the instrument are a lack of information and incorrect assessment for some juveniles. Lack of training was also identified as another factor.

Probation officers feel that parts of the instrument are helpful. The most helpful were the family and school information, and the juvenile's history. The least helpful was the scoring and many questioned its accuracy. Overwhelmingly, they (84%) said their own judgment was better and 51% said they did not think it was an appropriate way to make decisions. At the same time, they did not think the system would be better off without the risk assessment instrument, because some of the components were good. In particular, the parts about the juveniles use of drugs and alcohol, their behavior in school, and family considerations were considered important. The majority did not think the instrument was better for certain groups, and almost all (94%) believed it was not biased against gender, racial, or ethnic groups.

The improvements the probation officers mentioned most were to improve the questions and clarify how the scores are arrived at. Probation officers do not think the instrument is resulting in uniformity of decision making statewide.

An assessment of the risk/needs instrument's reliability found that probation officers were able to score risk/needs items in a manner that demonstrated consistency. The five items that were most predictive for the first referral population also were found to show high levels of interrater reliability. Some items such as juvenile's relationship with family and behavior/mental health problems require more precise operational definitions and better training for the probation officers to improve reliability.

Judges Opinions

In contrast to the probation officers, almost all judges say they use the risk/needs instrument. Forty-six percent said in all cases and 42% said it played a major role in their decisions. Eighty-three percent said it was helpful and 71% felt the risk/needs assessment instrument was a good (54%) or excellent (17%) idea. However, they all said it was just one factor in their decisions, and 42% said it was not the most appropriate manner to make decisions.

Judges use a wide range of other factors to make decisions. The most often used were the family conditions, the juvenile's history, and the youth's attitude and demeanor. In contrast to probation officers, four judges believed it very biased against gender and ethnic groups (Native Americans and Hispanic youths). Judges had more faith in the instrument's validity than the probation officers; 63% thought it resulted in valid identification of juveniles who were at risk for reoffending and 54% said it identified the juveniles' need for services.

The judges did not make many recommendations for improvement. The few who did mentioned improving the scores and determining if it is valid.

It is clear that judges use the risk/needs assessment instrument more than probation officers and they are less likely to think that the system would be better off without it. Only two judges were very negative in their comments about the instrument. Judges also do not complain about the scoring system anywhere near as much as probation officers, nor do they criticize the questions in the instrument itself. However, the overall comments and responses of both the judges and probation officers clearly indicate that neither group would like to have a risk/needs assessment instrument completely replace their own discretion and judgment. Judges tended to say that it was a useful tool, but it should only be one factor in their decisions, and probation officers felt that if they knew it was an accurate predictor of juvenile risk they would use it more, but would rely more on the written comments than on the scores.

Conclusions and Recommendations

This study represents considerable progress toward fulfilling the intent of the 1994 legislation regarding the implementation of a standardized instrument to assess risk for subsequent offense. To successfully use such a system, however, efforts must be ongoing to determine if the instrument is valid over time, and to ensure probation officers and judges are fully informed of the uses and limitations of the revised instrument. Thus, we offer the following recommendations:

1. Adopt the recommended procedure for assessing juveniles' risk for subsequent complaint at each and every referral. This would require programming into the current information system the predicted probability equations using the maximum likelihood coefficients corresponding to the variables that were determined to be most predictive for juveniles with one, two, and three or more referrals. This would produce a percentage of risk for subsequent offense for each juvenile. The programming must include a differentiation between missing data and scores of zero. The score should not be interpreted if there is 80% or more of the data on the risk assessment items missing (i.e., more than 1 out of 5 items).

2. Decrease the data collection burden on the probation officers by decreasing the number of items on the current risk/needs assessment instrument to include only those items that are predictive of risk, those items that are important for needs assessment and service planning, and those items that are important for the consideration of community standards or just desserts. The revised instrument should indicate through subheadings and grouping, which items are used for predicting risk of subsequent complaint, which are used for case planning according to individual need, and which are for community standards.

3. In assessing the items to be retained for the needs assessment, the information provided in the literature review should be considered, as well as the comments from the probation officer and judge surveys. For instance, the literature review recommended that the domains of substance abuse, family relationship, emotional stability (suicide), school attendance and behavior, peer relationships, health and hygiene, intellectual ability, and learning disabilities be considered in assessing need for case planning. The probation officers responded that they would like written comments as opposed to, or in addition to the yes/no responses to some of the items on the current instrument. Page 5 of this report lists those items required to be included by state statute.

4. Improve the validity and reliability of the information that will be collected by encouraging probation officers to collect information on each and every juvenile at each and every referral. Validity and reliability can be improved by training probation officers in the collection of information on the predictive items. Part of this process should include presenting information to the probation officers that would inform them of the utility of the revised system. The revised instrument should be designed in such as way that the operational definitions are presented with the item to be rated, this may also reduce error.

5. Monitor the completion of the risk assessment information using data from the JOLTS. This should occur on an ongoing basis, and feedback to the counties should be given so that they can take corrective action if required.

6. Plan for and carry out subsequent empirical validation of the risk assessment portion of the instrument on a regular basis (yearly or every two years) using data from the JOLTS. The first occurrence of validation for the revised system requires two full years of implementation (one year of active cases, and one full year of follow-up). The predictive

validity of the items used to predict risk can change over time as juveniles and their families' change. Thus it is important to validate the instrument to assess its predictive validity over time, and to change the values of the maximum likelihood coefficients used to calculate the predicted probabilities used to predict subsequent risk. The maximum likelihood coefficients can also be expected to change once the data collection is more complete and the lower risk juveniles are fully represented. The cross-validation method described in this report, which uses independent estimation and validation samples should be used for subsequent validation research.

7. Continue efforts to match risk-level with treatment planning in all counties and evaluate outcomes in terms of subsequent referral.

CHAPTER ONE

INTRODUCTION

The past three decades have been witness to an increasing interest in risk assessment in the corrections field. Risk assessment is based on the calculation of statistical relationships between offender characteristics and outcomes such as recidivism. The process of risk assessment involves estimating an individual's likelihood of continued involvement in delinquent behavior, based on the relationship of specific characteristics to delinquency. Several trends have contributed to the increased popularity of risk assessment. First, a steady increase in the number of juveniles until 1997 that were entering the juvenile justice system has heightened the demand for rehabilitation services. This increased demand for services combined with their high cost has prompted efforts to target services, based on a systematic assessment of need, to those at the high end of the risk continuum, while reducing efforts aimed at those on the low end. The assignment of low risk cases to intensive services may not only be a waste of scarce resources, but may in fact be criminogenic (Andrews et al. 1986).

Second, research has shown that a small number of offenders contribute disproportionately to the crime rate. For instance, recent research on two cohorts of first-time juvenile delinquents in Orange County, California found that approximately 10% of the juveniles accounted for over one-half of all subsequent offenses (Kurz & Moore, 1993). Based on these findings, Orange County is developing a risk-based intervention strategy that emphasizes risk rather than crime seriousness. The recognition that a relatively few individuals commit the majority of crimes has prompted a more streamlined approach to the early identification of the most persistent juvenile offenders. The purpose of identifying high-risk juveniles early in their criminal careers is to provide them with cost effective prevention and treatment services. In Orange County, the chronic offender population averages nearly 20 months of incarceration within 6 years of their first offense, making the cost of incarceration alone $44,000 per individual (Kurz & Moore, 1993). At the rate of approximately 500 new chronic juvenile offenders per year, the estimated cost for incarceration in Orange County is $22 million per cohort. In another estimate, Camp and Camp (1990) reported that states commonly spend between $35,000 and $60,000 per year to incarcerate a youth. This does not take into account the cost of treatment, or associated costs born by the community, the family, and the individual. A reduction in placement would result in significant cost savings.

Table 1 demonstrates that Arizona, like California, is also experiencing the "8% chronic juvenile problem." Of all those juveniles active in the Arizona Supreme Court system from October 1, 1995 to October 1, 1996, the majority of juveniles, 81%, have only one complaint, whereas 8% of the juveniles are responsible for 78% of all subsequent complaints.

Table 1. Recidivism Analysis - 10/1/95 to 10/1/96 Cohort

Number of Referrals per Juvenile	Total Number of Juveniles in Each Category	Percent of Total Juveniles	Total Number of Referrals in Each Category	Total # of Subsequent Referrals as of 10/1/97	Percent of Subsequent Referrals
1	21,033	80.9%	21,033	0	0%
2	2,718	10.5%	5,436	2,718	21.8%
3+	2,245	8.6%	12,014	9,769	78.2%
Total	25,996	100%	38,453	12,487	100%

Note. Only includes children active in the Arizona Juvenile Justice System from 1/10/1995 to 1/10/1996, unduplicated count. Subsequent referrals are all those referrals after the first referral.

A third impetus for the increased attention to risk assessment is the call for greater equity in sentencing and decision making throughout the justice system. In 1973, an English researcher by the name of Bottomly found that the personality and attitude of the offender were more predictive of their treatment in the justice system than were their prior record, family situation, or employment prospects. Clinical risk assessment instruments and professional judgments have been demonstrated to be less reliable than empirically derived tools (Dawes, Faust, & Meehl, 1989; Meehl, 1954; Monahan, 1981). Risk assessment instruments have also been promoted to introduce greater equity and objectivity into correctional decision making, partly in a response to a perceived lack of fairness in the justice system. Using a standardized instrument to assess risk assures that the same factors are taken into account for each case. All available evidence points to the superiority of systematically derived empirical tools over unsystematic, or even trained, clinical decision making (Gottfredson & Gottfredson, 1979; Meehl 1954; Monahan, 1981; Morris & Miller, 1985; Sawyer, 1966). Having an empirical basis for the instrument increases the validity of the risk assessment process and renders the rationale for any decision explicit. These factors, coupled with the explosion in automated information technology have increased interest in, and the feasibility of, risk assessment.

The Scope of this Study

Arizona's juvenile population between 8 and 17 years of age is increasing, as have the number of referrals to the Arizona Juvenile Court until 1997 (see Figure 1). Reports published by the Arizona Supreme Court reveal a steady increase in the number of juveniles referred, and in the number of referrals from 1994 to 1996, with a slight decline in juvenile court activity for 1997 (Arizona Supreme Court, 1995, 1996, 1997, 1998). See Appendix A for a diagram outlining the flow of juveniles through the juvenile justice system.

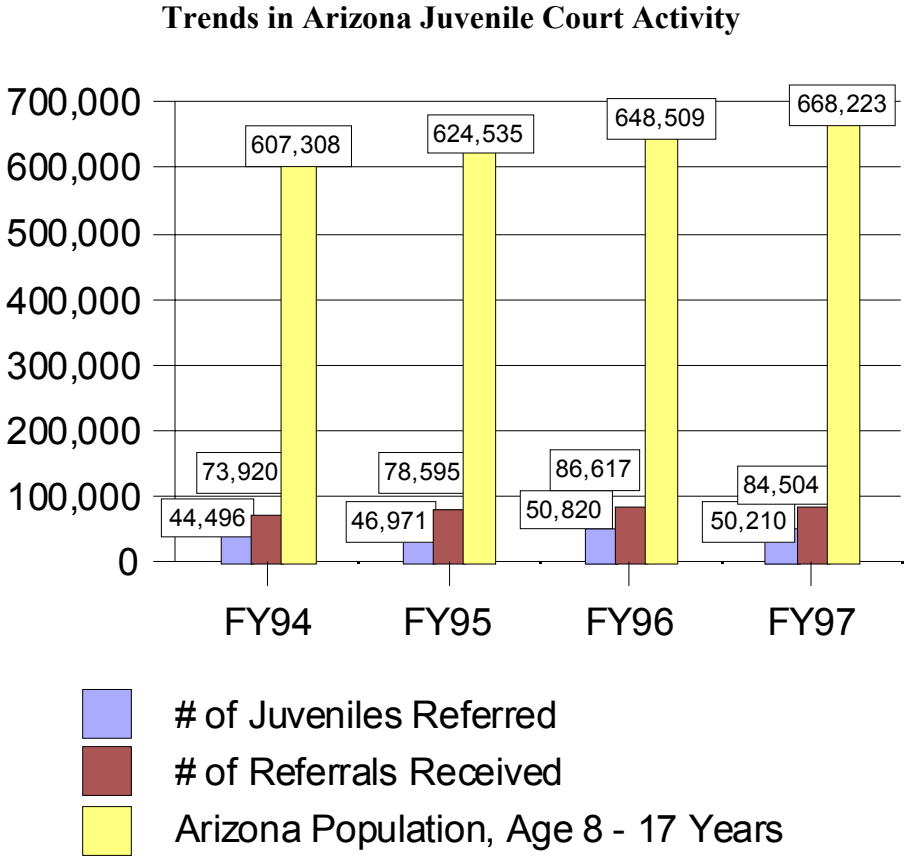

Figure 1.

In response to this increase in juvenile crime, Arizona, like many other states, has embarked on a prevention strategy. One aspect of this strategy is to identify and control the relatively small group of offenders that are predicted to become chronic, through graduated sanctions and individually tailored interventions that are consistent with the needs of the juvenile and their family. The goal of risk/needs assessment is to identify the risk of recidivism, which will allow resources to be disproportionately concentrated on those at the high end of the risk continuum based on individually specific need.

The History of Risk/Needs Assessment in Arizona

In 1987, the Arizona Chief Probation Officers Association established the Juvenile Case Classification Committee to pursue the development and implementation of a risk/needs assessment instrument (RIS Inc, undated manuscript a). The committee received staff and financial support from the Arizona Supreme Court for these efforts. Dr. Jim Riggs of Research & Information Specialists, Inc. (RIS Inc.) served as the primary consultant in the development of the instrument. Five counties, Maricopa, Pima, Coconino, Yuma, and Yavapai counties were selected to pilot the instrument. A survey was conducted of all juvenile probation officers in the state, which identified a number of potential risk factors. According to Riggs, three of the 16 risk factors passed the test of independence and statistical adequacy. These were:

- One or more prior petitions,
- Age at adjudication, and
- Number of prior referrals.

The committee also suggested 12 perceptual measures that require the subjective judgment of probation officers be included on the risk/needs assessment:

- Parent's concern regarding the child's involvement in the instant offense,
- Child remorseful about their involvement in the instant offense,
- Child cooperative with court and probation officer (PO),
- Parents cooperative with court and PO,
- Child's friends involved in delinquent behavior,
- Discipline style of the parents,
- Consistent parental supervision,
- Effective parental supervision,
- Adult in home has drinking problem,
- Adult in home has a drug problem,
- Child has drinking problem, and
- Child has drug problem.

The committee refined the concepts and developed operational definitions for the indicators. The five test counties collected data on each youth adjudicated by the court from May, 1988 to October, 1988. A total of 789 forms were collected. Following statistical analysis, ten variables were retained for the risk/needs assessment instrument:

- Number of referrals,
- Number of petitions,
- Parents concerned, parents cooperative,
- Parents effective, adult drinking problem,
- Adult drug problem,
- Child used alcohol within past year,
- Child used drugs within the past year,
- And child less than 15 years of age at current adjudication.

Weights were assigned to the 10 variables based on their predictive ability. The resulting score, known as the "*Post Adjudication Score*," provides the probability of subsequent referral, and ranges from 0 to 96 (RIS Inc, 1993a).

Training was conducted on the use of the risk/needs assessment instrument over the next few years, e.g., Cochise was the first to receive training in 1990 and Apache the last in 1992. A survey was conducted to determine how the risk/needs assessment system was being implemented. As of February 15, 1993, all 15 Arizona counties had received training on scoring the instrument, 12 counties were scoring the instruments and forwarding the data, five counties had policies in place for classifying cases, and five counties were using the risk/needs assessment instrument to place youth in specific classification levels (RIS Inc, 1993b).

Follow-up on the risk/needs assessment project found that, contrary to what was intended, the rate of recidivism was high for juveniles rated low risk and low for juveniles rated high risk by the risk/needs assessment instrument (RIS Inc., undated b). As a result, the weights of the risk/needs assessment instrument were reevaluated and revised in June, 1993. The new weights were based on a sample of 2,222 cases from the five pilot counties. The revised rates would increase the maximum risk score to 106. Still, however, the rate of recidivism for juveniles scoring 91 through 106 was 28.6% on the low end, and 58% for juveniles scoring 91 through 106 on the high end. Therefore, a new model with some changes in variables was proposed: total referrals, total petitions, family functioning, parents effective, school or employment, sibling criminal history, peer associations, alcohol use, and adjudication age. The new model was better able to differentiate rates of recidivism, i.e., 20.9% recidivism for those scoring from 0 to 10 and 59.3% for those scoring from 91 thru 106 had subsequent referrals. Thus, the new model differentiated recidivism better than the original assessment instrument. The predictive validity, however, was calculated on the estimation sample, and was not tested on an independent validation sample. In practice, the use of validation samples is recommended because the rate of classification using the estimation sample will always be inflated (Jones, 1996).

The classification goal in risk assessment is the extent that it is able to identify groups of offenders with widely different rates of re-offending. Well-designed instruments are typically able to identify a group of high risk offenders whose probability of recidivism is four or five times greater than the identified low risk offenders (Wagner, DeComo & Weibush, 1994). For example, Wayne County Michigan had rates of recidivism reported at 76% for the high risk group, 39% for the medium risk group, and 19% for the low risk group (Wagner, DeComo & Weibush, 1994, pp. 19-20).

Legislative Reform. In 1994, the Arizona State Legislature passed what is referred to as the Omnibus Juvenile Crime Bill. This new law formalized the beginning of the Arizona Supreme Court's Juvenile Justice Services Division's (JJSD) efforts at risk/needs assessment. Arizona Session Law 1994, Chapter 201, Section 10, which became effective July 17, 1994, required the development of a risk/needs assessment instrument. This new law specified that the risk/needs assessment instrument be developed for use with each child referred to the juvenile court, and updated on each subsequent referral. Risk assessment was to be used to determine the appropriate disposition for each child, and was mandated to include information on family history, school performance, vocational skills, mental health history, and previous illegal involvement.

Subsequent efforts at risk/needs assessment development in Arizona involved coordination with the National Council on Crime and Delinquency (NCCD), the Department of Juvenile Corrections (ADJC) and the juvenile courts. Since ADJC, formerly known as D/Y/T/R was already in the process of developing a risk/needs assessment instrument with the assistance of the NCCD, they agreed to expand their task to develop the risk/needs assessment instrument for the state (Wagner, DeComo, & Wiebush, 1994).

Through a review of cases processed from April through June, 1993, NCCD chose 1,501 first referral cases for juveniles under 17 years of age. The study was limited to characteristics observable at the initial interview with the youth or family. The NCCD compiled a theoretically

guided pool of predictor variables related to recidivism. Recidivism was defined as a subsequent delinquent complaint occurring within 365 days of the initial referral date (Wagner, DeComo, & Wiebush, 1994). This initial pool represents those factors believed necessary to be considered if data availability were not an issue. They also included additional variables at the direction of the Arizona Supreme Court's Risk/Needs Advisory Group.

NCCD researchers evaluated each variable for its ability to produce reliable and complete data. They then developed a risk/needs instrument to identify youths at risk for recidivism at the point of first complaint by contrast coding the variables that were statistically related to recidivism. The final items included in the assessment of risk were:

- Number of counts alleged in the referral,
- Type of offense alleged including whether weapons or drugs were involved,
- Assaultive,
- Status offense
- Two or more property offenses,
- Was the juvenile detained,
- Age at first complaint,
- Misdemeanor or other as most serious offense class alleged,
- Elapsed time between offense and referral.

The risk/needs assessment instrument was also developed to create an overall profile of a youth's need for treatment and other prevention services.

Currently, when probation officers complete the risk/needs assessment, they enter the data in the automated information system and receive in return one of two scores. The NCCD score is calculated for juveniles at first referral, the Post Adjudication Score is calculated for juveniles who have been previously adjudicated. The NCCD score ranges from minus one thru positive nine. A score of minus one or zero represents *low risk* for subsequent complaint, one through three indicates *medium risk*, and four through nine indicates *high risk*. The authors report that the scale has produced subsequent complaint prediction rates of 15%, 31%, and 47% respectively, for the categories of low, medium, and high risk of recidivating (Wagner, DeComo, & Wiebush, 1994, p. 49). Consistent with the RIS Inc. research, however, these rates were based on the estimation sample, which is known to be biased favorably in terms of the discriminating ability of the model (Jones, 1996).

The 1994 legislation required the Supreme Court and ADJC to develop a common risk/needs assessment to be used for each child referred to the juvenile court and specified that the instrument be used to determine the appropriate disposition for the child. Since the development of the first referral risk/needs assessment instrument by NCCD, the courts have been collecting information on a set of risk/needs items recommended by NCCD, and items defined by JJSD and the Juvenile Courts of Arizona. All items were operationally defined, and procedures were developed for the collection of information and reporting (see the Risk/Needs Manual of August, 1995).

A pilot risk/needs project began in April of 1995 and continued through September of 1995. All staff were to have begun using the instrument for every first and subsequent referral as of

October 1, 1995. By statute, the risk/needs instrument is to be updated for each and every referral. Data collection on the risk/needs assessment items have been tracked statewide since October 1, 1995 through October 1, 1997. These data constitute the information used for this study.

The Research Questions

The goal of most prediction studies is to combine a small number of predictors into a simple, composite model that maximizes predictive efficiency in terms of validity, cost, and usefulness. To realize this goal, prediction instruments must be validated. Variables that prove to be highly predictive in one setting and at one point-in-time, may not have the same predictive ability in a different setting or subsequent study (i.e., they may be temporally unstable). In 1997, the Arizona Supreme Court, Juvenile Justice Service Division put forth a request for proposals to empirically validate the Arizona Risk/Needs Assessment Instrument, and to assess its reliability and utility. The contract to conduct the validation research was awarded to LeCroy and Milligan Associates, Inc. The overall goal of the validation study is to assess the current performance of the Arizona Risk/Needs Assessment Instrument, and to recommend steps to improve its performance. The Risk/Needs Advisory Group made reference to five questions that the validation study should address. These questions, and the five key concepts they address, are central to validation research and form the basis of this report.

1. Validity - does the instrument achieve the goals for which it was designed and with what precision?

2. Reliability - is the risk/needs assessment instrument accurately and consistently administered and scored?

3. Equity - is the risk/needs assessment instrument biased toward young, minority, and female juveniles?

4. Utility - is the system relatively easy to use and understand, and how will it be accepted and used?

5. Parsimony - can comparable, or enhanced, results be achieved with fewer items and a simpler scoring procedure?

Validity of the instrument is examined separately for the population of juveniles with one, two, and three or more referrals. These groups are examined separately because they generally have different probabilities of subsequent complaint. Stratifying the groups by number of referrals makes it unlikely that number of prior referrals will be a significant predictor of subsequent complaint because the variance in number of prior referrals for the first and second referral populations is eliminated.

Organization of this Report

To answer the five research questions proposed by the Risk/Needs Advisory Group this report is organized into six chapters. Chapter One presents an introduction to risk assessment and to the

Arizona Supreme Court risk/needs assessment project. Chapter Two provides a thorough review of the literature on risk assessment, focused on its relevance to juveniles in the criminal justice system. Chapters Three, Four, and Five are structured around the concepts of validity, reliability, and utility. Chapter Three examines the predictive accuracy of the NCCD and Post Adjudication Score instruments compared to the judgments of probation officers. Empirical findings are presented on the validity of a reduced set of predictive items. Chapter Three also includes analysis of potential bias related to race/ethnicity, gender, and age. Chapter Four examines the consistency of assessment among multiple probation officers. Chapter Five reports the perceptions of Arizona Supreme Court Judges who work in the juvenile justice system, and those of a random sample of Arizona probation officers, stratified by county. The final chapter presents a summary of the study with conclusions and recommendations for further development in this area.

Methodology

The fact that risk prediction instruments are used to influence the correctional decision making process underscores the need for a rigorous methodological approach that is aware of problems encountered in the past, and makes recommendations to control for them. Thus, work on the validation began with a thorough review of the literature, which is summarized in the next chapter. In order to answer the five research questions, several types of quantitative and qualitative data were collected from a variety of sources. Data for the validation were extracted from the Juvenile On-Line Tracking System (JOLTS). The extracted database carries data on all juveniles who were active as of July 1, 1992, and all juveniles going forward from that date until October 1, 1997. JOLTS is an information management system that has been operational in Maricopa County for over 17 years, and statewide for five full-years since July, 1992. Reportedly, the accuracy of the data increases with its currency for many counties (personal communication, Ms. Bobbie Chinsky, January 28, 1998). Statistical analysis using JOLTS data were performed using the Statistical Package for the Social Sciences (SPSS) software. The outcome variable, subsequent delinquent complaint, is defined as any complaint which occurs within 365 days of the initial referral date for the 1st referral population, and within 365 days of the 2nd and last referral dates for the populations with 2 and 3 or more referrals, respectively. The study makes use of a variety of descriptive, bivariate, and multivariate statistical procedures. Specifics of the statistical analysis relating to each research question is described in the corresponding chapter.

Sample Selection

The study includes only those juveniles who were active in 1995 and 1996, and excludes those who had previous complaints and were referred in 96/97 but not in 95/96. The reason for excluding this group of juveniles is that data were not available for one full-year of follow-up, nor were there data on the risk/need assessment for complaints prior to 1995. The cutoff date for data extraction was October 1, 1997, providing a minimum of one full year of follow-up.

The research required separation of the data into three groups: a first referral group, juveniles with 2 referrals, and those with three or more referrals (see Table 2).

Table 2. Criteria for Inclusion in the Study

Group	*N*	Description of Sampling Criteria
Group 1	29,747	Includes juveniles with at least one referral, the first referral being after the point the current risk/needs assessment was implemented
Group 2	14,389	Includes juveniles with one referral prior to implementation of the risk/needs assessment and at least one complaint from 10/1/95 to 10/1/96, or juveniles with two complaints from 10/1/95 to 10/1/96 (juveniles from Group 1 who had a subsequent complaint are included here)
Group 3	43,522	Includes juveniles whose number of complaints prior to implementation of the current risk/needs assessment was two or more and who have at least one complaint from 10/1/95 to 10/1/96, or juveniles with three or more complaints from 10/1/95 to 10/1/96 (juveniles from Group 2 who had a subsequent complaint are included here).

Note. The numbers reported in this table do not represent an unduplicated count. Juveniles who were active prior to the risk/needs assessment, but not from Oct 1, 1995 to Oct. 1, 1996 are not included, even if they were active from Oct. 2, 1996 to Oct. 1, 1997. The exclusion of this group is due to the insufficient time for follow-up (12 months) from the most recent offense.

Upon reviewing descriptive statistics for the three groups of juveniles extracted from the JOLTS, decision rules were formed about the deletion of certain cases. These decisions related to obvious data entry errors and insufficient opportunity for follow-up because of the juvenile's age or in cases where the offense required transfer to the adult system.

The following decision rules were used to eliminate cases from Group 1:

- Gender specified as missing,
- Age as of complaint date less than eight years of age,
- Age as of October 1, 1997 greater than or equal to 18 years of age,
- Disposition of current referral was transfer to adult court,
- Days between offense and referral was less than zero,
- Number of times juvenile detained is greater than one,
- Number of times detention was requested is greater than one,
- Number of prior adjudications is greater than zero,
- Legal status at referral was courtesy supervision, LOJ, parole, or probation, and
- Number of days detained is greater than or equal to 90, subsequent to the current referral.

The following decision rules were used to eliminate cases from Group 2:

- Gender specified as missing,
- Age as of complaint date less than eight years of age,
- Age as of October 1, 1997 greater than 18 years of age,
- Disposition of current referral was transfer to adult court,
- Days between offense and referral was less than zero, and
- Number of days detained is greater than or equal to 90, subsequent to the current referral.

The following decision rules were used to eliminate cases from Group 3:

- Gender specified as missing,
- Age as of complaint date less than eight years of age,
- Age as of October 1, 1997 greater than 18 years of age,
- Disposition of current referral was transfer to adult court,
- Duplicate identification numbers were eliminated to provide an unduplicated sample,
- Days between offense and referral was less than zero, and
- Number of days detained is greater than or equal to 90, subsequent to the current referral.

Table 3 shows the number of first time referral cases by county. The data presented by county represents the county that received the referral. This is usually the county where the juvenile lived, but is not always the case. For instance, if a juvenile from Chicago ran away to Phoenix and is arrested by police in Maricopa County, that juvenile may be referred to Maricopa County and may remain detained until travel arrangements can be made for the return trip home.

Applying the selection criteria listed above to the 29,747 records reduced the population of juveniles with one referral to 20,099. Similarly, in Table 4 we see that Group 2 was reduced from 14,389 to 9,497, and Table 5 shows that Group 3 was reduced from 43,522 to 10,739. The large reduction in the size of Group 3 is primarily due to the multiple referrals for individual juveniles.

Assessment of Missing Risk/Needs Assessments

The groups were further refined by those who had a completed risk/needs assessment entered in the automated database and those who did not. Tables 3, 4 and 5 present the percentage of risk/needs assessments completed by county, and overall for the state. Examining the last column in each of the three tables, it is possible to determine which counties have higher rates of completion of the risk/needs assessment instrument. Lower rates of completion tend to be found in the smaller, and outlying counties of the state.

Table 3. Narrowing the Sample of Juveniles with One Referral

County	Total Number of Juveniles Reported in the Database	Revised Population Based on Application of Selection Criteria	Number with Risk/Needs Assessment Complete	Percent with Risk/ Needs Assessment Complete
Apache	354	239	90	37.7%
Cochise	1,169	792	478	60.4%
Coconino	1,350	915	552	60.3%
Gila	615	396	188	47.5%
Graham	268	199	109	54.8%
Greenlee	103	73	44	60.3%
LaPaz	140	91	29	31.9%
Maricopa	14,267	9,085	4,952	54.5%
Mohave	1,142	845	480	56.8%
Navajo	893	578	157	27.2%
Pima	5,614	4,261	3,246	76.2%
Pinal	1,230	858	442	51.5%
Santa Cruz	295	185	78	42.2%
Yavapai	1,213	822	492	59.9%
Yuma	1,094	760	418	55.0%
Total	29,747	20,099	11,755	58.5%

Table 4. Narrowing the Sample of Juveniles with Two Referrals

County	Total Number of Juveniles Reported in the Database	Revised Population Based on Application of Selection Criteria	Number with Risk/Needs Assessment Complete	Percent with Risk/Needs Assessment Complete
Apache	169	117	35	29.9%
Cochise	575	378	216	57.1%
Coconino	590	408	277	67.9%
Gila	262	163	76	46.6%
Graham	125	93	36	38.7%
Greenlee	58	37	14	37.8%
LaPaz	56	31	4	12.9%
Maricopa	6,808	4,260	2,858	67.1%
Mohave	491	353	203	57.5%
Navajo	341	209	62	29.7%
Pima	3,077	2,217	1,562	70.5%
Pinal	587	400	170	42.5%
Santa Cruz	108	75	19	25.3%
Yavapai	526	350	192	54.9%
Yuma	616	406	197	48.5%
Total	14,389	9,497	5,921	62.3%

Table 5. Narrowing the Sample of Juveniles with Three or More Referrals

County	Total Number of Juveniles Reported in the Database	Revised Population Based on Application of Selection Criteria	Number with Risk/Needs Assessment Complete	Percent with Risk/Needs Assessment Complete
Apache	446	105	33	31.4%
Cochise	1,985	404	228	51.8%
Coconino	1,991	474	299	63.1%
Gila	921	215	88	40.9%
Graham	371	88	30	34.1%
Greenlee	150	34	17	50.0%
LaPaz	83	27	6	22.2%
Maricopa	17,922	4,722	3,265	69.1%
Mohave	1,573	402	204	50.7%
Navajo	872	207	53	25.6%
Pima	10,421	2,630	1,728	65.7%
Pinal	1,778	415	155	37.3%
Santa Cruz	243	76	17	22.4%
Yavapai	1,287	366	210	57.4%
Yuma	3,479	538	286	53.2%
Total	43,522	10,739	6,619	61.6%

Comparison of Those with Risk/Needs Assessment Completed vs. Those Without

Validation of the risk/needs assessment instrument is dependent on the quality of the data available. Those with completed risk/need assessment instruments were compared to those without to assess the similarity of the juveniles. Tables 6, 7, and 8 compare juveniles on nine demographic and complaint related characteristics. Appendix B presents this same analysis by county. County data are presented to assess the type of bias introduced by the missing data, as well as to provide information to the county departments on the juvenile characteristics that correlate with their missing data.

Table 6. Characteristics of the Juveniles with One Referral

Variable	Population (*N* = 20,099)	*Risk/Needs Complete* (*N* = 11,755)	*No Risk/Needs* (*N* = 8,344)
Age at first referral			
8 - 11.99 years	11.5%	11.9%	10.9%
12 - 15.99 years	50.4%	52.5%	47.4%
16 - 17.00 years	38.1%	35.6%	41.6%
Ethnicity			
Asian/Pacific Islander	0.4%	0.5%	0.4%
Black	5.9%	6.2%	5.5%
Hispanic	31.3%	32.3%	29.7%
Indian	5.9%	4.9%	7.3%
White	56.0%	55.6%	56.6%
Gender			
Female	37.1%	35.8%	39.1%
Male	62.9%	64.2%	60.9%
Severity of Most Severe Offense			
Felony Against Person	3.7%	4.4%	2.7%
Felony Against Property	11.6%	13.9%	8.4%
Hindering Justice	0.5%	0.6%	0.4%
Misdemeanor Against Person	8.8%	10.7%	6.1%
Drugs	7.6%	10.3%	3.9%
Disturbing Peace	14.2%	14.6%	13.6%
Misdemeanor against property	26.7%	26.1%	27.4%
Incorrigible, runaway	26.7%	19.3%	37.0%
Citations	0.2%	0.1%	0.2%
Juvenile Detained			
Yes	9.4%	10.6%	7.6%
No	90.6%	89.4%	92.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.1%	48.6%	42.1%
4:01 p.m. to 10:00 p.m.	32.9%	33.6%	31.7%
10:01 p.m. to 7:59 a.m	21.1%	17.8%	26.2%
Subsequent Complaint			
Yes	33.3%	38.4%	26.2%
No	66.7%	61.6%	73.8%
Average # of Days to Subsequent Complaint (Standard Deviation)	134.7 (105.4)	132.34 (103.9)	139.42 (108.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.5%	3.5%	3.4%
Felony Against Property	11.7%	11.7%	11.5%
Hindering Justice	4.0%	5.0%	1.8%
Misdemeanor Against Person	9.3%	10.1%	7.9%
Drugs	8.7%	9.0%	8.7%
Disturbing Peace	12.9%	12.8%	12.9%
Misdemeanor against Property	15.6%	15.3%	16.0%
Incorrigible, runaway	34.1%	32.3%	38.0%
Citations	0.2%	0.2%	0.4%

Table 7. Characteristics of the Juveniles with Two Referrals

Variable	Population (N = 9,497)	Risk/Needs Complete (N = 5,921)	No Risk/Needs (N = 3,576)
Age at first referral			
8 - 11.99 years	16.3%	16.5%	16.0%
12 - 15.99 years	60.9%	62.3%	58.6%
16 - 17.00 years	22.8%	21.2%	25.3%
Ethnicity			
Asian/Pacific Islander	0.5%	0.6%	0.3%
Black	7.0%	7.3%	6.4%
Hispanic	34.4%	34.3%	34.7%
Indian	5.1%	4.4%	6.1%
White	52.7%	53.0%	52.3%
Other	0.3%	0.4%	0.2%
Gender			
Female	32.8%	31.8%	34.3%
Male	67.2%	68.2%	65.7%
Severity of Most Severe Current Offense			
Felony Against Person	4.1%	4.5%	3.4%
Felony Against Property	11.7%	13.1%	9.4%
Hindering Justice	3.7%	3.2%	4.5%
Misdemeanor Against Person	9.2%	10.3%	7.5%
Drugs	8.2%	9.6%	5.8%
Disturbing Peace	13.4%	13.4%	13.4%
Misdemeanor against property	16.3%	18.8%	12.1%
Incorrigible, runaway	33.1%	26.8%	43.6%
Citations	0.3%	0.2%	0.3%
Juvenile Detained			
Yes	12.3%	14.4%	8.8%
No	87.7%	85.6%	91.2%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	42.1%	43.5%	39.3%
4:01 p.m. to 10:00 p.m.	31.4%	32.1%	30.0%
10:01 p.m. to 7:59 a.m.	26.5%	24.3%	30.7%
Subsequent Complaint			
Yes	57.4%	61.9%	50.0%
No	42.6%	38.1%	50.0%
Average # of Days to Subsequent Complaint (Standard Deviation)	119.5 (102.6)	117.7 (101.3)	123.3 (105.1)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.1%	4.3%	3.6%
Felony Against Property	11.8%	12.1%	11.1%
Hindering Justice	7.9%	8.7%	6.3%
Misdemeanor Against Person	9.2%	9.4%	8.9%
Drugs	8.4%	8.2%	8.8%
Disturbing Peace	13.6%	13.4%	14.0%
Misdemeanor against Property	13.4%	14.2%	11.6%
Incorrigible, runaway	31.3%	29.4%	35.0%
Citations	0.4%	0.3%	0.4%

Table 8. Characteristics of Juveniles with Three or More Referrals

Variable	*Population* (*N* = 10,739)	*Risk/Needs Complete* (*N* = 6,619)	*No Risk/Needs* (*N* = 4,120)
Age at first referral			
8 - 11.99 years	27.3%	26.4%	28.8%
12 - 15.99 years	62.4%	63.1%	61.1%
16 - 17.00 years	10.4%	10.5%	10.1%
Ethnicity			
Asian/Pacific Islander	0.4%	0.4%	0.4%
Black	8.7%	9.4%	7.5%
Hispanic	37.5%	37.7%	37.2%
Indian	4.6%	3.9%	5.7%
White	48.6%	48.3%	49.0%
Other	0.2%	0.2%	0.2%
Gender			
Female	28.0%	27.5%	28.8%
Male	72.0%	72.5%	71.2%
Severity of Most Severe Current Offense			
Felony Against Person	4.1%	4.9%	2.9%
Felony Against Property	12.0%	13.1%	10.2%
Hindering Justice	12.4%	13.6%	10.4%
Misdemeanor Against Person	8.7%	9.3%	7.8%
Drugs	7.7%	8.8%	6.1%
Disturbing Peace	13.3%	12.6%	14.4%
Misdemeanor against property	12.0%	13.5%	9.8%
Incorrigible, runaway	29.2%	24.1%	37.5%
Citations	0.5%	0.2%	0.9%
Juvenile Detained			
Yes	19.6%	21.3%	16.9%
No	80.4%	78.7%	83.1%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	40.3%	40.8%	39.5%
4:01 p.m. to 10:00 p.m.	30.8%	31.7%	29.3%
10:01 p.m. to 7:59 a.m	28.9%	27.5%	31.2%
Subsequent Complaint			
Yes	73.6%	77.0%	68.3%
No	26.4%	23.0%	31.7%
Average # of Days to Subsequent Complaint (Standard Deviation)	76.6 (93.9)	81.5 (94.9)	68.7 (91.7)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.8%	3.5%	4.2%
Felony Against Property	12.1%	11.6%	13.1%
Hindering Justice	16.5%	18.6%	12.6%
Misdemeanor Against Person	9.0%	9.0%	9.1%
Drugs	7.8%	7.7%	7.9%
Disturbing Peace	12.8%	12.5%	13.5%
Misdemeanor against Property	10.6%	10.9%	10.0%
Incorrigible, runaway	27.0%	26.0%	28.9%
Citations	0.4%	0.2%	0.8%

All of the group differences on the nine variables reported in Tables 6, 7, and 8 are statistically significant at the $p < .05$ level. This is not surprising, given that even very small differences tend to be statistically significant when working with large sample sizes such as these. Examining the distribution of individual variables in Tables 6, 7 and 8, we see that the more substantive differences tend to occur in relation to three variables. Females tend to be less likely than males to have a risk/needs assessment completed, juveniles who are detained are more likely to have a risk/needs assessment completed than those not detained, and those with more serious offenses such as felonies against a person or property are more likely to have a risk/needs assessment completed than those with less serious offenses. Thus, the data in Table 6, 7, and 8 provide insight into the factors that probation officers may consider when deciding to complete the risk/needs assessment instrument.

Table 9. Completion of Risk/Needs Assessment by Subsequent Complaint and County for 1st Referral Group

County	Risk/Needs Assessment Complete		No Risk/Needs Assessment		Chi Square Test of Statistical Significance
	No Subsequent Complaint	Subsequent Complaint	No Subsequent Complaint	Subsequent Complaint	
Apache	50.0%	50.0%	76.5%	23.5%	T p. = .000
Cochise	64.2%	35.8%	69.4%	30.6%	V p. = .130
Coconino	65.9%	34.1%	84.6%	15.4%	T p. = .000
Gila	59.6%	40.4%	78.8%	21.2%	T p. = .000
Graham	70.6%	29.4%	57.8%	42.2%	V p. = .059
Greenlee	61.4%	38.6%	69.0%	31.0%	V p. = .507
LaPaz	65.5%	34.5%	79.0%	21.0%	V p. = .167
Maricopa	58.7%	41.3%	75.2%	24.8%	T p. = .000
Mohave	70.0%	30.0%	75.3%	24.7%	V p. = .086
Navajo	73.9%	26.1%	73.4%	26.6%	V p. = .906
Pima	62.9%	37.1%	68.7%	31.3%	T p. = .001
Pinal	63.1%	36.9%	69.2%	30.8%	V p. = .059
Santa Cruz	57.7%	42.3%	67.3%	32.7%	V p. = .181
Yavapai	65.0%	35.0%	74.8%	25.2%	T p. = .003
Yuma	59.3%	40.7%	70.2%	29.8%	T p. = .002
Total	61.6%	38.4%	73.8%	26.2%	T p = .000

Tables 9, 10, and 11 examine the completion of risk/needs assessments by county, in relation to the outcome variable - subsequent complaint. The check marks in the last column represent differences between the two groups (risk/needs complete vs. incomplete) that are statistically significant. Wherever statistically significant differences exist, the rate of subsequent complaint is higher among those juveniles who have a completed risk/needs assessment instrument, than for juveniles who do not have a risk/needs assessment recorded. This biases the data used for the study toward a higher risk population than what the risk/needs assessment instrument is applied to.

Table 10. Completion of Risk/Needs Assessment by Subsequent Complaint and County for the 2nd Referral Group

County	Risk/Needs Assessment Complete		No Risk/Needs Assessment		Chi Square Test of Statistical Significance
	No Subsequent Complaint	Subsequent Complaint	No Subsequent Complaint	Subsequent Complaint	
Apache	20.0%	80.0%	46.3%	53.7%	T p. = .007
Cochise	44.0%	56.0%	43.2%	56.8%	V p. = .881
Coconino	38.3%	61.7%	64.1%	35.9%	T p. = .000
Gila	25.0%	75.0%	56.3%	43.7%	T p. = .000
Graham	36.1%	63.9%	47.4%	52.6%	V p. = .285
Greenlee	21.4%	78.6%	60.9%	39.1%	T p. = .020
LaPaz	50.0%	50.0%	22.2%	77.8%	V p. = .236
Maricopa	34.7%	65.3%	55.3%	44.7%	T p. = .000
Mohave	39.4%	60.6%	50.7%	49.3%	T p. = .035
Navajo	40.3%	59.7%	44.2%	55.8%	V p. = .603
Pima	43.9%	56.1%	43.4%	56.6%	V p. = .809
Pinal	40.6%	59.4%	46.1%	53.9%	V p. = .273
Santa Cruz	31.6%	68.4%	35.7%	64.3%	V p. = .743
Yavapai	43.8%	56.3%	50.6%	49.4%	V p. = .199
Yuma	34.5%	65.5%	44.5%	55.5%	T p. = .040
Total	38.1%	61.9%	50.0%	50.0%	T p = .000

Table 11. Completion of the Risk/Needs Assessment by Subsequent Complaint and County for the 3+ Referral Group

County	Risk/Needs Assessment Complete		No Risk/Needs Assessment		Chi Square Test of Statistical Significance
	No Subsequent Complaint	Subsequent Complaint	No Subsequent Complaint	Subsequent Complaint	
Apache	9.1%	90.9%	26.4%	73.6%	T p. = .043
Cochise	24.1%	75.9%	20.3%	79.7%	V p. = .333
Coconino	24.7%	75.3%	40.0%	60.0%	T p. = .000
Gila	12.5%	87.5%	40.2%	59.8%	T p. = .000
Graham	30.0%	70.0%	19.0%	81.0%	V p. = .242
Greenlee	11.8%	88.2%	41.2%	58.8%	T p. = .052
LaPaz	16.7%	83.3%	38.1%	61.9%	V p. = .326
Maricopa	22.0%	78.0%	37.3%	62.7%	T p. = .000
Mohave	29.9%	70.1%	36.9%	63.1%	V p. = .139
Navajo	17.0%	83.0%	31.2%	68.8%	T p. = .046
Pima	25.5%	74.5%	24.3%	75.7%	V p. = .486
Pinal	23.9%	76.1%	26.5%	73.5%	V p. = .547
Santa Cruz	23.5%	76.5%	33.9%	66.1%	V p. = .418
Yavapai	24.8%	75.2%	34.6%	65.4%	T p. = .040
Yuma	15.7%	84.3%	29.0%	71.0%	T p. = .000
Total	23.0%	77.0%	31.7%	68.3%	T p. = .000

The consistency of having a higher subsequent complaint rate among juveniles with completed risk/needs assessments versus juveniles who do not have a completed instrument suggests that probation officers are discriminating with some level of accuracy juveniles who are more likely to be subsequently referred to the juvenile court system.

CHAPTER TWO

LITERATURE REVIEW

Prediction research in corrections can be traced back to Burgess (1928). Burgess developed a risk assessment scale using scores of 0 or 1 for each predictor variable and then used the total score to guide decisions for parole. Glueck and Glueck (1950) were also early pioneers in delinquency prediction research. They compared 500 institutionalized male juvenile delinquents with 500 young males in ordinary schools. The Glueks' work attracted severe criticism, however, because their sample did not represent the population to which their research was being generalized, i.e., they chose extreme groups and did not use a separate sample for validation. In addition, their research was criticized for even attempting to predict delinquency. Wilkins (1985) wrote:

> *I have conducted research into the prediction of recidivism and see no moral objection to this, but I have not, and would not, carry out research aimed at predicting probable delinquency* (p. 35).

Thus, most subsequent efforts in risk assessment are concerned with predicting recidivism as opposed to delinquency.

The Uses of Risk Assessment Instruments

Risk prediction instruments can be used at different points in the justice process; at intake to predict pretrial misconduct and to make recommendations for disposition; at sentencing; and at parole. However, Gottfredson's Salient Factor Score has been used for parole, sentencing, and pretrial release guidelines. Goldkamp and Gottfredson (1985) undertook a large study to determine the correlates of pretrial misconduct for the Philadelphia judiciary. Current charge was determined to be the dominant variable, with knowledge of the defendant's prior arrests, prior felony convictions, prior failures to appear, pending charges, employment, and living arrangements playing a secondary role. By empirically modeling the decision making process, these researchers were able to make implicit practices explicit. After making the decision making process explicit, they turned to an analysis of pretrial failure. They showed that considerable differences existed in predictors of judicial decisions as well as pretrial failure.

In recent years risk assessment advocates have turned their attention to the decision making process related to case management and supervision, as well as to appropriate community placement. For example, prediction instruments may be used to discriminate between high- and low-risk probationers for supervision purposes. High-risk probationers may be assigned to more intensive supervision services, whereas low risk probationers may receive regular probation. But risk assessment instruments developed for probation/parole are not appropriate for detention decisions. Probation/parole assessments would likely include measures of stability such as runaway and escapes.

Although parole and delinquency represent the context for most of the early prediction research, it has also been applied to dangerousness and selective incapacitation. To date, these methods have shown a high rate of under-classification, and only a low percentage of high risk offenders were actually receiving intensive intervention. Although research predicting violence has been met with limited success, such efforts are continuing. Currently a study of adult probation in the City of New York is being undertaken to guide the level of treatment received by probationers. With the task of serving more probationers without a concomitant increase in budget, the New York City Department of Probation changed its philosophy to focus resources disproportionately on the violent offender. In 1993, the New York City Department of Probation began research to predict violence during the post-sentence probation period.

Andrews et al. (1986) suggest that the process of matching offenders to intervention programs should focus on three principles - *risk*, *need*, and *responsiveness*. The risk principle maintains that "higher levels of supervision may reduce the recidivism of higher risk offenders but will have no such effect on the recidivism of low risk cases" (p. 377). Thus, the first step in programming services should be the selection of clients based on their risk of further offending.

The needs principle distinguishes between criminogenic and non-criminogenic needs (Brown, 1996). Criminogenic needs are dynamic risk factors (Gendreau et al., 1994), such as attitudes concerning employment or authority that have been linked to changes in offending. The needs principle suggests that when criminogenic needs are met, recidivism will be reduced. In contrast, non-criminogenic needs, which include a range of more stable character variables, such as anxiety and self-esteem, are considered inappropriate targets for treatment since their resolution does not appear to have any significant effect on recidivism (Gendreau et al. 1994). The responsivity principle suggests that offenders should be placed in programs that closely match their preferred learning styles and abilities. Together, these three principles represent a *best practice* model for programming rehabilitative services (Brown, 1996).

Armstrong (1991) has reported on a large number of community-based alternatives to incarceration for juveniles. Selection of the appropriate target population for these alternatives is the most important component of program design and program implementation. In some areas, especially rural areas, there may not be a range of treatment options available, and thus this particular use of risk/needs assessment is of limited utility. The application of generally derived knowledge is far from straightforward, requiring careful examination of local environmental contingencies that may mediate treatment effects (Brown, 1996).

According to Wagner, DeComo and Weibush, Arizona is the first state to pursue risk assessment aimed at predicting recidivism from the first complaint. They state:

> *We note that very few, if any, agencies have made systematic efforts to develop risk assessment procedures for screening first referrals. This is, in large part, a resource issue. Diversion programs are limited in most jurisdictions and the resources necessary to conduct meaningful client assessments at initial contact are generally deployed to deal with more serious, adjudicated cases. These factors, combined with the relative difficulty of securing accurate information about families at first referral, tend to discourage the practice* (1994, p.39).

Needs Assessment

Needs assessments are used to systematically identify offender problems. They ensure that certain types of problems are considered, provide a rapid assessment of problems for case management and referral to service providers from other agencies, assist in case planning, indicate the need for a greater frequency of contact, and provide information for agency planning and evaluation. Questions used for the needs assessment are not necessarily those used to make classification decisions, although some questions may serve a dual purpose. Most agencies use a consensus approach to identifying and prioritizing the service issues most frequently encountered in the client population. Tailoring intervention services to the individual requires a needs assessment be completed. Needs assessments typically measure the following domains for each individual (U.S. Department of Justice and Delinquency Prevention, 1995):

1. Substance abuse,
2. Family functioning or relationships,
3. Emotional stability (suicide),
4. School attendance and behavior,
5. Peer relationships,
6. Health and hygiene,
7. Intellectual ability, and
8. Learning disabilities.

Methodological Issues in the Development of Risk Assessment Instruments

The risk prediction literature includes many studies that suffer from serious methodological flaws that threatens the validity of available instruments. These flaws include inadequate sampling, poor quality data, design faults including estimation without validation, over reliance on static predictors, measurement error of the criterion and predictor variables, and inappropriate statistical analysis.

Sample Size and Sample Selection. The most common problem encountered in risk prediction research is data limitations. Data limitations constrain the potential for sophisticated and more appropriate statistical approaches to analysis. There are two basic sampling issues that lead to limitations in the data. First, the size of the sample. In terms of how big the sample should be, Jones (1996) recommends at least 500, half for estimation and half for validation. If a large number of variables are being tested in multivariate statistical analysis, it is common practice to ensure that the sample includes at least 10 subjects for each predictor variable considered (Norman & Streiner, 1986).

Second, the sample must be representative of the population to whom the instrument will be applied, therefore, it should be a random sample. Even if a sample is large and appropriately drawn, serious problems may still emerge. The patterns found in one sample can lead to overestimating patterns that might exist in other samples. Representativeness can encompass the variables of age, gender, race and ethnicity, regional area, and time period (Jones, 1996).

Missing Data. Invariably the best laid plans are constrained by the quality of the data available. Often this problem is not recognized, or it may be noticed and not addressed. The main effect of missing data is to reduce the size of the sample at the stage of multivariate analysis. How this problem is dealt with depends in part on how much data is missing, and how important the particular variables afflicted are thought to be as predictors. If there are few missing values and the data are missing completely at random, then the analysis should be based on those cases with a complete set of variable values (Jones, 1996). Other than a reduced sample size, this complete-case approach poses no problems. An alternative approach that makes use of available information is to include all cases that have values for a specified group of variables. This available-cases approach has the significant disadvantage that statistics such as means and variances are based on samples of different sizes. A third approach is the imputation of missing values. This involves the estimation of missing values based on those data that are available (Little & Rubin, 1987).

The Lack of Validation. Criticism of several studies has revolved around the use of only one sample for estimation, and the subsequent failure to test the accuracy of the derived model on an independent *validation* sample. The primary purpose of using a separate sample for validation is to test the extent that empirically derived relationships persist across samples. When the risk assessment instrument is validated on the same sample from which it was estimated, the rate of correct classification is naturally much higher. Thus, the use of at least two samples is recommended, one for estimation and one or more for validation. The lack of differentiation on the criterion variable is always more apparent during validation than the construction of the instrument. The prediction instrument developed on a selective sample is often applied to a population containing a wider range of risk than that of those individuals originally studied. Under such circumstances, the best policy is to identify a random sample that is as closely related as possible to the population of interest. If this is not possible, it may be useful to examine empirically differences between the original sample and the population of interest.

An Over Reliance on Static Predictors. In instances where a person's risk-level is assessed at more than one point in time, it is necessary to move away from a reliance on variables that remain constant toward more dynamic indicators (Jones, 1996). Static indicators can be historical (e.g., parent criminality) or ascribed (e.g., gender or race). As individuals can exercise no control over static factors, they are insensitive to change over time. The repeated use of these same variables can result in individuals being censured over and over for the same attributes. Psychiatric measures, response to supervision or institutionalization, employment, and family situation, are examples of dynamic factors. One risk assessment instrument involving dynamic factors is offered by Baird (1984). He has developed an initial risk assessment instrument and a reassessment instrument. His reassessment instrument retains the most significant initial predictors such as age at first adjudication, prior criminal behavior, and institutional placements of more than 30 days, and adds to this dynamic factors such as response to supervision and the use of community resources. Dynamic factors introduce a stronger element of judgment or discretion into the classification process. Underwood (1979) cautions that the inclusion of subjectively scored items may provide opportunity for personal biases to be passed off as scientific judgment.

Operationalization of the Criterion Variable. Almost all criminological prediction studies use some form of official record of offending as the criterion variable, usually arrest, conviction, or incarceration (Jones, 1996). If arrest is the criterion measure, however, and police agencies are biased in their arrest procedures, then the study will likely identify those factors associated with the police selection process as predictors of criminality. It is important to recognize that official measures confound the behavior of the individual with the behavior of the system.

The problems inherent in choosing arrest as a criterion measure are amplified when conviction or incarceration are chosen as the criterion measure. Charge bargaining can produce very different impressions of the seriousness or dangerousness of an arrest, differences that appear between the initial charge and the conviction charge. To deal with this issue, some studies have used self-reports of criminal behavior. This practice is far from a panacea, however, as self report of deviant behavior has also been found to have reliability problems. Weis (1986) reports that black respondents tend to under-report criminal activity more than whites. One suggestion is to use an official measure, but to exclude possible biasing factors such as race.

In addition to operationalization of the criterion variable, there are important decisions to be made concerning the length of follow-up for the predicted behavior to occur. Often, researchers are forced to adopt a relatively short period of time. Studies of pretrial misconduct rarely include follow-up periods of more than 6 months (Jones & Goldkamp, 1991). Jones (1996) proposes that follow-up periods should be no less than two years if possible.

A second issue in the operationalization of the criterion variable is the level of measurement used. Usually the criterion variable is dichotomous - i.e., delinquent/non-delinquent or recidivist/ non-recidivist. Although dichotomous measures are easier to analyze, more efficient or elaborate definitions are possible. These include the frequency of recidivism, the seriousness of recidivism, the time to first offense, and the rate of offending per unit time at risk.

Statistical Analysis. Simon (1971) compared seven different statistical techniques only to conclude that they all worked equally well. Tarling and Perry (1985) extended this initial examination of alternate statistical methods by submitting the same data to analysis by two additional prediction methods - automatic interaction detection (CHAID) and logistic regression. They concluded that these methods performed equally well, but not significantly better than any of Simon's 1971 approaches. Gottfredson and Gottfredson (1979) completed a similar comparative study involving several analytic methods - linear additive models (OLS multiple regression and unweighted Burgess method), clustering models, and multidimensional contingency table analysis. They concluded that simpler and more easily understood and implemented statistical prediction devices may work as well as those based on more complex techniques (1985, p. 75). What is most important in any empirical study is that the type of analysis be suited to the type of data available and the application desired. If one wants a rough measure of risk, the Burgess approach would suffice. Alternatively, if one wants to understand the relative strength of the predictors and their interrelationships, then more sophisticated analytic approaches are sensible.

The most common problem using regression-based approaches to prediction are identified as the use of a dichotomous dependent variable, the inclusion of a relatively large number of potential predictors (because of the potential for unidentified interaction terms), and the presence of correlated explanatory variables (multi-collinearity) (Norman & Streiner, 1986).

Alternative multivariate approaches, particularly clustering techniques have been criticized for being unstable. The inability to replicate cluster solutions effectively negates the value of their approach to prediction. Gottfredson and Gottfredson (1979) disagree, claiming that replication is less important than validation. They propose that as long as the predictive efficacy of a cluster-based device can be demonstrated, then it should not matter that the cluster structure cannot be successfully replicated.

Amidst the debate over the appropriateness of linear regression and cluster approaches to prediction, log linear and logistic regression techniques have been introduced. The log-linear technique is far more appropriate for the types of data generally available within criminal justice, though there is little evidence that it significantly outperforms even the simplest Burgess method of prediction (Gottfredson & Gottfredson, 1979; Tarling & Perry, 1985). In criminal justice, the criterion variable is usually dichotomous, and the predictor variables a mix of categorical and continuous variables. Under such circumstances, the choice is essentially between clustering and log-linear approaches. An optimal approach would be to combine the methods and take advantage of the potential benefits of each.

Accounting for Incarceration and Intensive Supervision. There is some evidence to show that the primary effect of parole is to postpone rather than halt re-offending (e.g., Broadhurst and Maller 1990; Flanagan1983; Nuttall et al., 1977). It is important to consider the timing of re-offense in addition to any simple dichotomous measure of the criterion variable.

Individual Predictions Based on Group Data. The empirical validation of risk assessment instruments is necessarily based on group data. Thus, such instruments are most useful in determining aggregate outcomes. The ability to predict an individual's behavior is modest. Even the best risk assessment instruments result in substantial individual prediction errors (false negatives and false positives). *False negatives* are predictions in which the individuals are identified at-risk but do not go on to commit a crime; *false positives* are predictions in which those who are not identified as at-risk do go on to commit a crime. Well designed risk-assessment instruments are typically able to identify a group of high-risk offenders whose probability of selection is four to five times higher than low-risk offenders (Wagner, DeComo & Wiebush, 1994).

Gottfredson (1987) reported that in criminology, the generally poor quality of data, combined with the highly random nature of criminal behavior, ensures that prediction research rarely explains more than 15% to 20% of the outcome variance, and may never do much better than 30%. With large samples, a prediction model explaining just 10% of variance can produce statistically significant results but it may not be a good predictor of re-offending.

Choosing Predictor Variables. The goal in risk assessment is to choose the smallest number of variables with the greatest predictive validity. This goal, however, can be modified by the issue of face validity. Burnham (1990) argues that decision makers feel uncomfortable with only a limited set of data items and require a range of information, most of which they do not take into account. He differentiates between *information*, that which leads to predictive efficacy; and *noise*, those items necessary for the instrument to be supported by the user. Most commonly, prediction models include both individual and environmental variables as predictors. Ideally, the pool of possible predictors is theoretically derived, with one variable representing each theoretical construct, and each of the selected variables tested for validity and reliability. In practice, prediction in the area of criminality is constrained by poorly defined theory. Given these cautions, we turn our attention toward key predictor variables supported in the literature.

Key Predictor Variables

The Office of Juvenile Justice and Delinquency Prevention has identified a set of risk and protective factors related to delinquency for children age six through adolescence (U.S. Department of Justice and Delinquency Prevention, 1995). These risk factors include:

1. Extreme economic deprivation,
2. Community disorganization and poor neighborhood attachment,
3. Transitions and mobility,
4. Availability of firearms,
5. Media portrayals of violence,
6. Family management problems,
7. Family conflict,
8. Parental attitudes favorable toward crime or involvement in crime,
9. Early and persistent antisocial behavior,
10. Academic failure,
11. Lack of commitment to school,
12. Rebelliousness and alienation,
13. Association with peers who engage in delinquency,
14. Early initiation of delinquent and violent behaviors,
15. Constitutional factors (low intelligence, hyperactivity, and attention deficit disorder).

Protective factors, i.e., those factors thought to decrease risk include:

1. Social bonding to a positive role model,
2. Healthy beliefs, and
3. Clear standards.

Reviews listing salient predictors for a range of possible outcomes are reported by Baird, 1973, 1991; Gabor, 1986; Gottfredson, 1987; and Tarling, 1993. For each type of criterion considered, there are similarities among the risk scales produced, irrespective of the setting. For a juvenile parolee population, Baird, Storrs, and Connolly (1984) identified eight items that were shown to be predictive of recidivism:

1. Age at first adjudication,
2. Prior delinquent behavior,
3. Number of prior commitments to juvenile facilities,
4. Drug or chemical abuse,
5. Family relationships,
6. School problems, and
7. Peer relationship problems.

Points are given for each of the eight items and then summed to derive a total risk score. Higher scores on the instrument indicate a greater likelihood of recidivism.

Greenwood (1982) developed a re-offending prediction score based on seven items:

1. Incarceration of more than half of the 2-year period preceding the most recent arrest,
2. A prior conviction for the crime type that is being predicted,
3. A juvenile conviction prior to age 16,
4. Commitment to a state or federal juvenile facility,
5. Heroin or barbiturate use in the 2-year period preceding the current arrest,
6. Heroin or barbiturate use as a juvenile, and
7. Employment for less than ½ of the 2-year period preceding the current arrest.

Employing a 0 or 1 scoring theme, Greenwood was able to discriminate between recidivists such that the low risk group (0 or 1 point) had a median annual offense rate of 1.4%, compared with a rate of 92.9% for the high risk group (4 or more points).

Kurz and Moore (1993) identified a profile of the high-risk juvenile petitioner as someone aged 15 years or less at initial system referral, and displaying two or more of the following attributes:

1. School behavior or performance problems such as truancy, recent suspensions, or expulsions, detentions, functioning significantly below grade level, flunking, or a severe learning problem,
2. Family problems such as death, financial problems, recent divorce/separation, child abuse/neglect, criminal family members,
3. Substance abuse problems, and
4. Delinquency factors including runaway or stealing behaviors, gang membership.

Beyond these, other studies point to a number of potential predictors of crime for juveniles and adults. Some of these include:

1. Early onset of problem behavior (Mitchell & Rosa, 1981),
2. Parenting and family management problems (Riley & Shaw, 1985),
3. Family size and structure (West, 1981),
4. Parental or sibling criminality (Farrington, 1983),
5. Delinquent peers (Reiss, 1986),
6. Alcohol use (Gottfredson, 1984),
7. Gender (Hindelang, Hirschi, & Weis, 1981),

8. Personality (McCord & McCord, 1964), and
9. A history of opiate use (Gottfredson & Ballard,1964).

Pretrial urine test results have been shown to be a poor predictor once prior record measures are controlled (Goldkamp, Gottfredson, & Jones, 1988). Community and family ties were once felt to be very important along with offense seriousness in the consideration of bail and predicting pretrial success. Gottfredson (1974) demonstrated that they were very weak predictors when examined empirically.

Use and Attitudes Toward Risk Assessment Among Juvenile Judges and Probation Officers

The biggest threat to the advancement of risk prediction techniques is not poor quality data, or the selection of appropriate statistical techniques. It is the commonly held belief that risk prediction is a very mechanical procedure that requires no policy input. It is typical that researchers produce an instrument for administrators who generally know (or care) little about the design, statistical, or ethical decisions that were made (Schnieider, Ervin, & Snyder-Joy, 1996). Researchers, for their part, do not engage administrators in the prediction exercise, and key decision points are treated as though they were value free, and outside of the policy realm (Bazemore & Dicker, 1996).

Recently, judges and probation officers have been finding their discretion in decision making being limited in favor of objective criteria and risk assessment. Much of the research and theoretical literature on policy implementation suggests that when decision makers in criminal justice agencies are confronted with policies that restrict their discretion, they often subvert reforms by failing to comply or by taking other actions that neutralize the impact of the new policy (e.g., Eisenstein and Jacob, 1991, pp. 306-310). If they do not believe in the viability or intent of these policies they may find alternative means to exercise discretion that the reforms are meant to restrict. Thus, it is important to assess the extent to which judges and probation officers share policy makers' values, beliefs, and attitudes regarding the purpose of detention and recognize and have faith in practical alternatives. Also, their faith in home detention and other non-secure alternatives may influence their support for restricted decision making.

Bazemore (1994) attempted to account for the variation in judges' support of objective restrictions. His findings show that the variation stems from demographic, occupational and role orientation variables. Variables Bazemore considered include:

1. Previous prosecutorial experience,
2. Number of years on the juvenile bench,
3. Age,
4. Race,
5. Gender,
6. Beliefs about the purpose of detention,
7. Confidence in alternative forms of treatment,
8. Support for risk assessment reforms,
9. How they see it used,

10. Attitude toward statutory changes restricting,
11. Attitudes toward risk assessment, and
12. Detention criteria.

Ethical Issues in Risk Assessment

The major controversy surrounding the increased use of risk prediction in criminal justice concerns the ethical and legal implications of such developments. Generally, those who believe in limited power and intrusion of the state oppose risk prediction (Tonry, 1987). In contrast, those who believe in extensive state powers and who favor public safety tend to support risk prediction. Most of the debate over the use of risk prediction has focused on predicting dangerousness, as it relates to detention, sentencing, and parole. Prediction research has shown that there is a weak relationship between violence and subsequent offense (Clear, 1988). Monahan (1981) concluded that under the best circumstances, predictions of violent behavior were likely to be wrong twice as often as right. The research in this area is inconclusive. In support of predicting violent recidivism, Lattimore, Visher, and Linster (1995) suggest that prior criminal history and socioeconomic variables are predictive of both the timing and the charge of first arrest following parole.

In the 1980s it was established that some of the variables being used to predict recidivism were correlated with race (Tonry, 1987). In response, research reported by Petersilia and Turner (1987) found that most sentencing guidelines exclude race and gender related variables, and tend to rely on criteria associated with crime seriousness. They claim that this implies that sentencing patterns and guidelines are more interested in *just desserts* than with probable recidivism. They claim that the larger question is whether the system chooses to tolerate racial and gender disparities that result from imposing uniform sentencing criteria. Factors in decisions related to detention often go beyond the assessment of risk. In particular, when making placement decisions correctional officials may not only consider the juvenile's likelihood of re-offending, but also consider just desserts and public sensitivity. As a result, risk assessment instruments used to guide placement often include items concerning current and prior offense severity. Colorado's security placement instrument gives twice as much weight to severity of current offense in comparison with other items. Only a handful of generalizations applicable to risk prediction can be derived from the U.S. Supreme Court's interpretation of the United States Constitution on this matter. Basically, these are that reliance on information related to race, ethnicity, political beliefs, sex, and religion are prohibited. Primary reliance on prediction variables related to the current offense and prior record are nearly always considered acceptable (Tonry, 1987).

CHAPTER THREE

VALIDITY

This study builds on early efforts of the Arizona Supreme Court to develop and implement a risk/needs assessment instrument statewide. This chapter assesses the validity of the current instrument, and determines if there is a subset of items that would achieve greater predictive efficacy.

Steps in the Analysis

The first step that was taken in the analysis was to separate the juveniles into three groups, those with one, two, and three or more referrals, and to retain only those who had a completed risk/needs assessment in the JOLTS automated data base. Individuals from the three groups with completed risk/needs assessments were then randomly assigned to one of two groups, an estimation sample (60% of the population with risk/needs completed) and a validation sample (the remaining 40%). Random assignment was employed to produce two equivalent groups. The estimation sample is used to determine the predictive power of the variables. The validation sample, in contrast, was drawn for the purpose of testing the predictive efficacy of the risk/needs assessment instrument, as predictions are always more accurate when tested on the samples from which they were constructed than when tested on independent samples. Tables 12, 13 and 14 compare the estimation and validation samples for each of the three groups, respectively.

Tables 12, 13 and 14 show that Group 1 (those with one referral) has a subsequent complaint rate of about 38%, Group 2 (those with two referrals) has a higher rate at 62%, and Group 3 (those with three or more referrals) has the highest rate of subsequent complaint, 77%. The majority of all three groups of juveniles are in the 12 to 15 years of age range. They also tend to be white, male, and commit their crimes before 10:00 p.m. Most of the juveniles are not detained and the majority of crimes are classified as incorrigible, runaway, and property.

Table 12 Comparison of the Estimation and Validation Samples for Juveniles with One Referral

Variable	Estimation Sample		Validation Sample	
	N	% with Subsequent Complaint	N	% with Subsequent Complaint
Sample	7,001	38.6%	4,754	38.1%
Age at first referral				
8 - 11 years	858	26.3%	545	23.5%
12 - 15 years	3,627	39.9%	2,544	40.1%
16 - 17 years	2,516	40.9%	1,665	36.6%
Ethnicity				
Asian/Pacific Islander	34	23.5%	23	30.4%
Black	439	45.6%	291	43.0%
Hispanic	2,246	42.3%	1,544	42.1%
Indian	332	33.4%	244	32.0%
White	3,886	36.7%	2,629	35.9%
Other	29	24.1%	14	35.7%
Unknown	6	--	1	--
Gender				
Female	2,500	36.3%	1,706	34.9%
Male	4,501	39.9%	3,048	39.8%
Severity of Most Severe Current Offense	301	41.9%	214	34.1%
Felony Against Person	987	42.4%	645	38.4%
Felony Against Property	38	39.5%	30	36.7%
Hindering Justice	773	36.6%	489	38.9%
Misdemeanor Against Person	736	40.1%	470	37.0%
Drugs	998	34.5%	719	36.0%
Disturbing Peace	1,821	27.4%	1,249	27.5%
Misdemeanor against property	1,339	53.5%	935	54.8%
Incorrigible, runaway Citations	8	87.5%	3	--
Juvenile Detained				
Yes	775	48.3%	475	41.7%
No	6,226	37.4%	4,279	37.7%
Hour of Offense				
8:00 a.m. to 4:00 p.m.	3,295	35.3%	2,168	34.4%
4:01 p.m. to 10:00 p.m.	2,197	37.2%	1,574	36.1%
10:01 p.m. to 7:59 a.m.	1,216	43.7%	787	44.7%

Table 13. Comparison of the Estimation and Validation Samples for Juveniles with Two Referrals

Variable	Estimation Sample		Validation Sample	
	N	% with Subsequent Complaint	N	% with Subsequent Complaint
Sample	3,529	61.6%	2,392	62.5%
Age at first referral				
8 - 11 years	583	55.4%	394	53.6%
12 - 15 years	2,191	62.0%	1,498	64.1%
16 - 17 years	755	65.2%	500	64.6%
Ethnicity				
Asian/Pacific Islander	24	58.3%	13	61.5%
Black	244	65.6%	188	69.1%
Hispanic	1,228	63.2%	800	64.4%
Indian	158	60.1%	105	60.0%
White	1,865	60.2%	1,273	60.7%
Other	10	60.0%	13	38.5%
Gender				
Female	1,132	59.2%	753	60.7%
Male	2,397	62.7%	1,639	63.3%
Severity of Most Severe Current Offense	163	58.9%	105	51.4%
Felony Against Person	464	65.7%	314	66.9%
Felony Against Property	113	66.4%	77	59.7%
Hindering Justice	347	63.4%	260	61.9%
Misdemeanor Against Person	360	55.3%	211	59.2%
Drugs	477	56.6%	315	60.0%
Disturbing Peace	641	52.7%	473	55.0%
Misdemeanor against property	956	69.5%	633	70.5%
Incorrigible, runaway Citations	8	75.0%	4	75.0%
Juvenile Detained				
Yes	503	66.6%	350	68.0%
No	3,026	60.7%	2,042	61.5%
Hour of Offense				
8:00 a.m. to 4:00 p.m.	1,379	57.9%	966	57.7%
4:01 p.m. to 10:00 p.m.	1,029	60.4%	701	62.8%
10:01 p.m. to 7:59 a.m.	794	63.9%	517	65.4%

Table 14. Comparison of the Estimation and Validation Samples for Juveniles with 3+ Referrals

Variable	Estimation Sample		Validation Sample	
	N	% with Subsequent Complaint	N	% with Subsequent Complaint
Sample	3,898	77.0%	2,686	77.2%
Age at first referral				
8 - 11 years	1,020	77.0%	712	78.2%
12 - 15 years	2,464	77.2%	1,696	76.7%
16 - 17 years	414	75.8%	278	77.3%
Ethnicity				
Asian/Pacific Islander	12	91.7%	16	50.0%
Black	379	78.4%	242	81.4%
Hispanic	1,486	78.7%	1,000	78.6%
Indian	152	80.3%	99	78.8%
White	1,858	75.0%	1,323	75.6%
Other	11	54.5%	5	60.0%
Unknown	-	-	1	100.0%
Gender				
Female	1,060	71.9%	757	72.0%
Male	2,838	78.9%	1,929	79.2%
Severity of Most Severe Current Offense	183	70.5%	136	71.3%
Felony Against Person	526	77.6%	334	78.1%
Felony Against Property	535	80.4%	361	81.4%
Hindering Justice	361	73.4%	252	75.8%
Misdemeanor Against Person	325	76.6%	251	73.3%
Drugs	486	77.2%	343	73.8%
Disturbing Peace	529	72.8%	362	74.6%
Misdemeanor against property	946	79.9%	640	80.9%
Incorrigible, runaway	7	42.9%	7	71.4%
Citations				
Juvenile Detained				
Yes	829	78.0%	565	80.0%
No	3,069	76.7%	2,121	76.4%
Hour of Offense				
8:00 a.m. to 4:00 p.m.	1,336	75.6%	955	74.9%
4:01 p.m. to 10:00 p.m.	1,056	77.0%	731	76.6%
10:01 p.m. to 7:59 a.m.	927	75.7%	615	79.2%

Validation of the Current Risk/Needs Assessment Instruments

The next task was to determine the predictive accuracy of the current risk/needs assessment instruments. As discussed in the previous chapter, an NCCD score is calculated for juveniles on their first referral, and a post adjudication score is calculated for juveniles who are adjudicated.

The First Referral Risk Score. Calculation of the NCCD score, the first referral score, is as follows. Technically, in order to obtain an NCCD score, two conditions must be satisfied: (1) the complaint number must equal 1; and (2) the score for post adjudication must equal 0, or the equivalent of "no." However, in a review of probation records we found NCCD scores that were calculated for subsequent complaints, and in some cases the risk assessment had only been completed once for several referrals. We also found two assessments for one juvenile, both labeled as the first assessment, and completed five months apart.

The items on the NCCD scale are coded as follows:

1. Number of counts alleged in the referral are two or more - 1 point,
2. Drugs or weapons involved in the offense - 1 point,
3. Child assaultive - 2 points,
4. Alleged offense is a status offense - 1 point,
5. Two or more property offenses alleged - 1 point,
6. The juvenile was detained - 1 point,
7. Age at first complaint older than 13 years - 1 point,
8. The most serious offense class alleged is misdemeanor - subtract 1 point, and
9. Elapsed time between offense and referral is 6 week or more - 1 point.

The NCCD 1st referral score ranges from a low of -1 to a high of 9. A score of -1 to 0 indicates low risk for subsequent complaint, a 1 to 3 indicates medium risk, and a 4 or greater represents high risk. Table 15 reports the subsequent complaint rate for juveniles classified as low, medium, or high risk according to their score on the NCCD developed risk assessment. The rate of subsequent complaint in the NCCD low risk group is substantially higher than reported in the NCCD validation study (26% versus 15%) (Wagner, DeComo, & Wiebush, 1994).

Table 15. Subsequent Complaint Rates for the 1st Referral NCCD Risk Classifications

NCCD Risk Score	Classification	Number of Cases N (%)	Subsequent Complaint Rate
-1 to 0	low	620 (15.7)	.26
1 to 3	medium	2,922 (74.0)	.34
4 plus	high	408 (10.3)	.50
Total		3,950 (100)	.34

Probation officers are asked to indicate their impressions of the juvenile's risk for subsequent referral in the next year, apart from the NCCD score derived from the risk/needs assessment instrument. They are instructed to rate the risk as low if they think that the juvenile's probability of re-offending is very unlikely. If the PO thinks that the child might re-offend if a situation presents itself, but the child probably would not seek out an offense, they are to rate the risk as *medium*. A rating of *high* indicates that the PO thinks the child is likely to re-offend (Arizona Risk/Needs Manual, 1995, p. 22).

When comparing the risk predictions from the NCCD score and the probation officers' impressions, it is important to consider two factors: the percentage classified in each group (low, medium and high), and the rate of subsequent complaints. Comparing the data in Table 15 and 16, it is apparent that the probation officers' rating of subsequent risk is superior to the NCCD classification. The probation officers were able to classify a much larger proportion of the juveniles as low risk (56% versus 16%). The probation officers' high risk group has a higher rate of subsequent complaints (.68) than the NCCD high risk group (.50). The total number of juveniles differs from Table 15 to Table 16, because the previous analysis required the juvenile to be scored on each variable considered in the NCCD risk formula. Juveniles with missing data on any of the variables included in the NCCD scale are automatically excluded from this analysis, whereas missing data does not prohibit the PO from making a judgment.

Table 16. Subsequent Complaint Rates for the 1st Referral Group - Probation Officer Predictions

Probation Officer Predictions	Number of Cases N (%)	Subsequent Complaint Rate
Low	2,635 (56.2)	.26
Medium	1,534 (32.7)	.48
High	520 (11.1)	.68
Total	4,689 (100)	.38

Calculation of the Post Adjudication Score. The Post Adjudication score was calculated for juveniles who had been adjudicated. It was derived from three areas.

1. The juvenile's delinquent history:
   - If this is a referral that is greater than or equal to 4 referrals add 21 points,
   - If this is a petition that is greater than or equal to 3 petitions add 21 points,
   - If the juvenile was less than 15 years old at the time of his/her first adjudication add 14 points.

2. Parental attitudes:
   - If parents not concerned, add 8 points,
   - If parents not cooperative, add 8 points,
   - If parents not knowledgeable about the juvenile's activities, add 8 points.

3. Substance abuse:
    - If adult drinks is yes or suspected, add 4 points,
    - If adult uses drugs is yes or suspect, add 4 points,
    - If child uses alcohol in past year, add 4 points, and
    - If child uses drugs, add 4 points.

The combined subtotal from the three areas provides the total post adjudication score. A post adjudication score of "X" was interpreted as "X" percent of juveniles with similar scores were found to have a subsequent complaint within one year (Personal Communication, Mr. Steve Ballance, June 19, 1998). Again, a review of individual cases revealed potential problems with the scoring. Answers of unknown on the above items resulted in a total score of 0, providing the appearance that the juvenile was low risk as opposed to the data being missing. Similarly, a juvenile with 14 prior referrals also had a risk score of 0 because they had not been adjudicated.

Three levels of risk for subsequent complaint are defined in Table 17: low (< 40% chance of subsequent complaint), medium (41% to 70%), and high (> 71% chance). As can be seen by the data in Table 17, the rate of subsequent complaint for the group of juveniles with 2 referrals does not increase consistently with the juvenile's post adjudication risk score. While the instrument does a good job of identifying those with a high risk of subsequent complaint, it does not separate out those with a low or medium risk.

Table 17. Subsequent Complaint Rates for the 2nd Referral - Post Adjudication Risk Classifications

Post Adjudication Risk Score	Classification	Number of Cases (%)	Subsequent Complaint Rate
0 - 10	low	558 (77.2)	.74
11 - 20	low	57 (7.9)	.63
21 - 30	low	55 (7.6)	.76
31 - 40	low	26 (3.6)	.80
41 - 50	medium	9 (1.2)	1.00
51 - 60	medium	12 (2.2)	1.00
61 - 70	high	3 (0.6)	1.00
71 - 80	high	3 (0.6)	1.00
81 - 90	high	0	-
91 - 100	high	0	-
Total		723 (100)	.74

Table 18 shows that the probation officers do a much better job of classifying risk for subsequent complaint for juveniles with two referrals than does the post adjudication score. The number of juveniles in the analysis is very different because Table 17 considers only those who had been adjudicated.

Table 18. Subsequent Complaint Rates for the 2nd Referral Group - Probation Officer Predictions

Probation Officer Predictions	Number of Cases (%)	Subsequent Complaint Rate
Low	671 (28.5)	.48
Medium	1,126 (47.8)	.62
High	561 (23.8)	.78
Total	2,358 (100)	.62

Table 19 shows the same phenomenon for juveniles with 3 or more referrals as Table 17 for juveniles with 2 referrals. The subsequent complaint rate does not increase consistently with increases in the post adjudication score.

Table 19. Subsequent Complaint Rates for the 3+ Referral Group - Post Adjudication Risk Classifications

Post Adjudication Risk Score	Classification	Number of Cases (%)	Subsequent Complaint Rate
0 - 10	low	866 (65.1)	.79
11 - 20	low	35 (2.6)	.60
21 - 30	low	96 (7.2)	.87
31 - 40	low	69 (5.2)	.83
41 - 50	medium	96 (7.2)	.88
51 - 60	medium	84 (6.3)	.85
61 - 70	high	41 (3.1)	.90
71 - 80	high	34 (2.6)	.91
81 - 90	high	6 (0.5)	1.0
91 - 100	high	3 (0.2)	1.0
Total		1,330 (100)	.81

Table 20 shows that the probation officers do a much better job of classifying risk for subsequent complaint for those juveniles with 3 or more referrals than the post adjudication score. High post adjudication scores (those over 80) do identify juveniles with high risk, but the proportion classified is only 6.4%.

Table 20. Subsequent Complaint Rates for the 3+ Referral Group - Probation Officer Predictions

Probation Officer Predictions	Number of Cases (%)	Subsequent Complaint Rate
Low	406 (15.4)	.58
Medium	1,191 (45.3)	.76
High	1,033 (39.3)	.85
Total	2,630 (100)	.77

One of the research questions of this study asked if comparable or enhanced results could be achieved with fewer items and a simpler scoring procedure. The next section outlines the procedure that was followed to reduce the number of variables considered in the risk/needs assessment, while attempting to maintain comparable or enhanced predictions.

Reducing the Number of Variables

Prior to analyzing the data pulled from the current risk/needs assessment instrument, an assessment of missing data was conducted. Variables with more than 10% of missing data were excluded from the potential list of predictor variables as per the recommendation of Jones (1996) because they were unreliable. The next step in reducing the number of variables was to conduct bivariate tests of statistical significance between the criterion variable and each predictor variable. Chi square tests were conducted for predictor variables with discrete categories. For predictor variables measured at the interval or ratio level of measurement, t-tests were conducted. A significance level of .05 was used as the criterion for retention in the study. Tables 21, 22 and 23 report the distribution of recidivism for each of the predictor variables, the extent of missing data, and the significance level. The notes at the bottom of each table list the variables that were not included because of missing data or non-significant relationships with the outcome variable -- subsequent complaint within 365 days.

Table 21. Relationship Between Risk/Needs Variables and Subsequent Complaint for the 1st Referral Population (see note at the bottom of the table for variables not included)

Variable	Estimation Sample (*N* = 6,932)			
	***Non-Recidivists* (*N* = 4,068)**	***Recidivists* (*N* = 2,516)**	***Percent with Missing Data***	***Statistical Significance***
Used Alcohol in Past Year	*27.4%*	*49.1%*	*5.0%*	*p* = .000
Used Drugs in Past Year	24.6%	50.7%	4.8%	*p* = .000
Runaway Attempts	14.1%	33.0%	4.0%	*p* = .000
Ever Neglected or Abused	12.5%	22.7%	6.1%	*p* = .000
Considered Suicide	8.6%	15.7%	7.0%	*p* = .000
Steals from Family and Friends	10.2%	20.4%	7.5%	*p* = .000
Delinquent Friends	49.4%	67.5%	5.1%	*p* = .000
Gang Involvement or Association	10.3%	26.6%	5.5%	*p* = .000
Behavior Problems/Mental Health Issues	22.7%	42.8%	4.2%	*p* = .000
Ever Placed in Residential/Psychiatric Facility	3.0%	6.8%	3.8%	*p* = .000
Attends School	91.4%	79.0%	2.7%	*p* = .000
Ever Dropped Out of School	7.3%	19.2%	4.2%	*p* = .000
Ever Truant or Extensive Absenteeism	20.9%	48.9%	4.9%	*p* = .000
Ever Behavioral Problems at School	34.9%	59.9%	5.2%	*p* = .000
Ever Suspended or Expelled	40.2%	63.8%	5.5%	*p* = .000
Ever Failed or Failing One or More Classes	38.7%	63.1%	6.2%	*p* = .000
Below Average School Performance in Last Year	21.2%	43.1%	0%	*p* = .000
Mentally Handicapped	1.7%	2.4%	0%	*p* = .030
Emotionally Handicapped	7.2%	13.8%	0%	*p* = .000
Learning Disabled	10.8%	15.2%	0%	*p* = .000
Gifted or Honor Student	10.7%	5.7%	0%	*p* = .000
Delinquent History	25.2%	39.8%	8.6%	*p* = .000
Recent Significant Family Problems	30.0%	45.2%	7.8%	*p* = .000
Parents/Guardians Concerned	97.1%	95.6%	5.0%	*p* = .001
Parents/Guardians Cooperative	97.6%	94.6%	5.3%	*p* = .000

Variable	Estimation Sample (N = 6,932)			
	***Non-Recidivists* (N = 4,068)**	***Recidivists* (N = 2,516)**	***Percent with Missing Data***	***Statistical Significance***
Parents/Guardians Knowledgeable about Child's Actions	88.2%	78.6%	6.5%	p = .000
Resident Authority Changed Within Last 5 Years	30.7%	37.7%	6.1%	p = .000
Moved in Past Year	28.1%	38.1%	6.2%	p = .000
Child has Alienated, Assaultive, Conflictual Relationship with Family	14.7%	36.7%	0%	p = .000
Family's has Disassociated Relationship with Child	13.5%	33.3%	0%	p = .000
Average age at first referral			0%	p = .000
8 - 11 years	14.8%	8.2%		
12 - 15 years	50.6%	53.5%		
16 - 17 years	34.7%	38.3%		
White	57.4%	53.0%	0.4%	p = .000
Female	63.8%	36.2%	0%	p = .005
Male	60.4%	39.6%		
Juvenile Detained	9.3%	13.6%	0%	p = .000
Juvenile is Subject of a Dependency Hearing	2.7%	5.4%	0%	p = .000
Juvenile has been Assaultive	28.1%	45.3%	4.8%	p = .000
Type of Offense			0%	p = .000
Felony	28.6%	32.2%		
Misdemeanor	57.2%	41.5%		
Administrative	0.5%	0.3%		
Status	13.7%	25.7%		
Other	--	0.3%		
Severity of Most Severe Current Offense			0%	p = .000
	4.0%	4.6%		
Felony Against Person	13.1%	15.4%		
Felony Against Property	0.5%	0.6%		
Hindering Justice	11.4%	10.4%		
Misdemeanor Against Person	10.3%	11.0%		
Drugs	15.3%	12.7%		
Disturbing Peace	30.9%	18.6%		
Misdemeanor against property	14.5%	26.5%		
Incorrigible, runaway Citations	--	0.3%		
Knife Used	1.5%	2.3%	0%	p = .026

Note. All percentages reported are valid percentages. Variables not included in the analysis because they had over 10% missing data are: frequent/serious disruption for alcohol and drugs, suicide a concern, job skills assistance needed, independent living skills assistance needed, adults have a drinking problem, parents use drugs, parents need parenting skills, need extended early intervention services, related to victim, treatment for victim's injuries required, juvenile completed program. Variables not included in the analysis because they were non-significant in a bivariate test of statistical significance include: weapon used, gun used, other weapon used, currently employed, physically handicapped, English as a second language, number of counts on all petitions, days between offense and referral, number of days detained.

Table 22. Relationship Between 2nd Referral Risk/Needs Variables and Subsequent Complaint (see note at the bottom of the table for variables not included)

Variable	Estimation Sample (*N* = 3,543)			
	***Non-Recidivists* (*N* =1,348)**	***Recidivists* (*N* =2,195)**	***Percent with Missing Data***	***Statistical Significance***
Used Alcohol in Past Year	*41.2%*	*58.8%*	*6.5%*	*p* = .000
Used Drugs in Past Year	39.9%	59.8%	6.3%	*p* = .000
Runaway Attempts	24.8%	43.1%	3.9%	*p* = .000
Ever Neglected or Abused	19.3%	27.4%	7.1%	*p* = .000
Considered Suicide	11.6%	17.9%	9.5%	*p* = .000
Steals from Family and Friends	14.4%	25.3%	8.9%	*p* = .000
Delinquent Friends	62.3%	76.9%	4.7%	*p* = .000
Gang Involvement or Association	20.3%	35.4%	5.8%	*p* = .000
Behavior Problems/Mental Health Issues	34.5%	54.7%	3.6%	*p* = .000
Ever Placed in Residential/Psychiatric Facility	5.8%	7.5%	4.0%	*p* = .046
Attends School	85.7%	70.7%	3.0%	*p* = .000
Ever Dropped Out of School	15.7%	27.1%	4.9%	*p* = .000
Ever Truant or Extensive Absenteeism	37.4%	61.2%	5.4%	*p* = .000
Ever Behavioral Problems at School	49.9%	68.2%	5.2%	*p* = .000
Ever Suspended or Expelled	57.5%	73.1%	5.7%	*p* = .000
Ever Failed or Failing One or More Classes	53.8%	71.9%	6.3%	*p* = .000
Below Average School Performance in Last Year	32.5%	50.7%	0%	*p* = .000
Emotionally Handicapped	11.6%	18.1%	0%	*p* = .000
Learning Disabled	14.6%	19.1%	0%	*p* = .001
Delinquent History	40.7%	50.3%	8.0%	*p* = .000
Recent Significant Family Problems	38.5%	52.9%	7.2%	*p* = .000
Parents/Guardians Cooperative	95.9%	93.6%	5.1%	*p* = .004
Parents/Guardians Knowledgeable about Child's Actions	85.2%	74.0%	7.0%	*p* = .000
Resident Authority Changed Within Last 5 Years	36.9%	41.4%	6.6%	*p* = .010

Variable	Estimation Sample (N = 3,543)			
	***Non-Recidivists* (N =1,348)**	***Recidivists* (N =2,195)**	***Percent with Missing Data***	***Statistical Significance***
Moved in Past Year	32.4%	39.0%	6.9%	p = .000
Child has Alienated, Assaultive, Conflictual Relationship with Family	23.6%	45.4%	0%	p = .000
Family's has Disassociated Relationship with Child	21.6%	41.9%	0%	p = .000
Average age at first referral			0%	p = .000
8 - 11 years	20.5%	14.1%		
12 - 15 years	59.8%	63.4%		
16 - 17 years	19.7%	22.5%		
Juvenile Detained	12.8%	15.7%	0%	p = .020
Juvenile is Subject of a Dependency Hearing	3.6%	6.0%	4.9%	p = .002
Juvenile has been Assaultive	42.1%	54.5%	4.9%	p = .000
Type of Offense			0%	p = .000
Felony	28.4%	28.2%		
Misdemeanor	48.1%	39.0%		
Administrative	3.0%	3.0%		
Status	20.3%	29.7%		
Other	0.1%	0.1%		
Severity of Most Severe Prior Offense			2.7%	p = .044
	4.9%	4.6%		
Felony Against Person	12.1%	14.0%		
Felony Against Property	0.7%	0.9%		
Hindering Justice	10.1%	11.1%		
Misdemeanor Against Person	6.7%	6.2%		
Drugs	13.4%	11.7%		
Disturbing Peace	29.0%	24.8%		
Misdemeanor against property	23.0%	26.5%		
Incorrigible, runaway	0.2%	0.2%		
Citations				
Severity of Most Severe Current Offense			0%	p = .000
	4.6%	4.4%		
Felony Against Person	12.1%	14.4%		
Felony Against Property	3.6%	3.2%		
Hindering Justice	10.6%	10.2%		
Misdemeanor Against Person	10.0%	8.6%		
Drugs	15.4%	12.7%		
Disturbing Peace	22.3%	15.9%		
Misdemeanor against property	21.4%	30.6%		
Incorrigible, runaway	0.1%	0.1%		
Citations				
Hour of Offense			8.9%	p = .020
8:00 a.m. to 4:00 p.m.	45.8%	41.9%		
4:01 p.m. to 10:00 p.m.	32.5%	32.4%		
10:01 p.m. to 7:59 a.m.	21.6%	25.7%		

Variable	Estimation Sample (N = 3,543)			
	Non-Recidivists (N =1,348)	***Recidivists (N =2,195)***	***Percent with Missing Data***	***Statistical Significance***
Any No Shows	11.1%	16.6%	0%	p = .000
Juvenile did not Complete Program	9.1%	20.8%	0%	p = .000

Note. All percentages reported are valid percentages. Variables not included in the analysis because they had over 10% missing data are: frequent/serious disruption for alcohol and drugs, suicide a concern, job skills assistance needed, independent living skills assistance needed, adults have a drinking problem, adults use drugs, parents need parenting skills, need extended early intervention services, related to victim, treatment for victim's injuries required, and juvenile completed program. Variables not included in the analysis because they were non-significant in a bivariate test of statistical significance include: currently employed, mentally handicapped, physically handicapped, English as a second language, gifted/honors, parents/guardians concerned, ethnicity, sex, weapon used, gun used, knife used, other weapon used, treatment for victims injuries, felony offense, number of counts on complaint, days between offense and referral, number of days juvenile detained, age at first commitment to ADJC, number of prior probation violations charged, number of days in out of home placement at referral, number of counts on all petitions, and number of prior referrals acquitted by the court.

Table 23. Relationship Between the Risk/Needs Variables and Subsequent Complaint for the Population with Three or More Referrals (see note at the bottom of the table for variables not included)

Variable	Estimation Sample (*N* = 3,941)			
	Non-Recidivists (N =904)	***Recidivists (N =3,037)***	***Percent with Missing Data***	***Statistical Significance***
Used Alcohol in Past Year	56.5%	71.5%	7.5%	p = .000
Used Drugs in Past Year	53.3%	74.2%	6.4%	*p* = .000
Runaway Attempts	36.5%	52.5%	3.5%	*p* = .000
Ever Neglected or Abused	29.8%	34.6%	9.5%	*p* = .000
Delinquent Friends	73.2%	85.5%	4.0%	*p* = .000
Gang Involvement or Association	34.4%	48.3%	6.7%	*p* = .000
Behavior Problems/Mental Health Issues	47.6%	61.3%	3.4%	*p* = .000
Attends School	71.2%	60.8%	2.5%	*p* = .000
Ever Dropped Out of School	35.7%	43.1%	4.7%	*p* = .000
Ever Truant or Extensive Absenteeism	58.5%	73.7%	4.2%	*p* = .000
Ever Behavioral Problems at School	64.1%	76.3%	4.3%	*p* = .000
Ever Suspended or Expelled	71.6%	82.7%	5.6%	*p* = .000
Ever Failed or Failing One or More Classes	67.2%	79.4%	6.1%	*p* = .000
Below Average School Performance in Last Year	48.0%	61.6%	0%	*p* = .000
Gifted or Honors Student	4.4%	3.0%	0%	*p* = .035
Physically Handicapped	0.3%	1.1%	0%	*p* = .031
Emotionally Handicapped	14.6%	21.4%	0%	*p* = .000
Learning Disabled	18.9%	25.7%	0%	*p* = .000
Delinquent History	56.4%	65.6%	8.2%	*p* = .000
Recent Significant Family Problems	50.7%	60.7%	7.1%	*p* = .000
Parents/Guardians Knowledgeable about Child's Actions	75.0%	69.5%	6.7%	*p* = .002
Moved in Past Year	39.9%	44.1%	5.8%	*p* = .029
Child has Alienated, Assaultive, Conflictual Relationship with Family	37.2%	54.4%	0%	*p* = .000
Family's has Disassociated Relationship with Child	35.7%	50.2%	0%	*p* = .000

Variable	Estimation Sample (N = 3,941)			
	Non-Recidivists (N =904)	***Recidivists (N =3,037)***	***Percent with Missing Data***	***Statistical Significance***
Weapon Used	8.1%	9.4%	0%	p = .030
Juvenile is Subject of a Dependency Hearing	5.8%	9.3%	4.3%	p = .001
Juvenile has been Assaultive	55.7%	64.1%	5.0%	p = .000
Type of Offense			0%	p = .006
Felony	29.1%	27.2%		
Misdemeanor	39.0%	34.6%		
Administrative	10.8%	13.3%		
Status	20.7%	24.7%		
Other	0.3%	0.1%		
Severity of Most Severe Prior Offense			0.3%	p = .000
Felony Against Person	13.1%	14.2%		
Felony Against Property	25.3%	29.5%		
Hindering Justice	4.9%	4.5%		
Misdemeanor Against Person	14.5%	13.9%		
Drugs	7.2%	6.8%		
Disturbing Peace	13.2%	10.1%		
Misdemeanor against property	11.1%	11.9%		
Incorrigible, runaway	10.7%	9.1%		
Citations	--	--		
Severity of Most Severe Current Offense			0%	p = .018
	6.0%	4.0%		
Felony Against Person	12.6%	13.4%		
Felony Against Property	11.6%	13.8%		
Hindering Justice	10.3%	8.7%		
Misdemeanor Against Person	9.4%	8.7%		
Drugs	13.3%	12.5%		
Disturbing Peace	14.9%	13.1%		
Misdemeanor against property	21.7%	25.7%		
Incorrigible, runaway	0.2%	0.2%		
Citations				
Number of Prior Complaints	Mean = 3.1	Mean = 3.9	0%	p = .000
Female	28.0%	72.0%	0%	p = .000
Male	21.1%	78.9%		

Note. All percentages reported are valid percentages. Variables not included in the analysis because they had over 10% missing data are: frequent/serious disruption for alcohol and drugs, ever considered suicide, suicide a concern, steals from family or friends, job skills assistance needed, independent living skills assistance needed, adults have a drinking problem, adults use drugs, parents need parenting skills, need extended early intervention services, related to victim, treatment for victim's injuries required, hour offense committed, and juvenile completed program. Variables not included in the analysis because they were non-significant in a bivariate test of statistical significance include: ever placed in a residential treatment center, currently employed, mentally handicapped, English as a second language, parents/guardians concerned, parents/guardians cooperative, resident authority changed within the last five years, age at first referral, ethnicity, gun used, knife used, other weapon used, related to victim, treatment for victims injuries, juvenile detained, severity of most severe prior offense, any no shows, race, felony offense, age at first commitment to ADJC, number of counts on complaint, days between offense and referral, number of days juvenile detained, and number of days in out of home placement at referral.

For the data presented in Tables 21, 22, and 23, responses of *suspected* were recoded as yes. For instance, for the question, has the juvenile used drugs in the past year, yes and suspected were coded as 1, and no as 0.

Correlation matrices including the variables that were retained for each group were examined to assess the likelihood of multi-collinearity. Multi-collinearity exists when predictor variables are highly correlated with one another. Ideally, predictor variables will be strongly correlated with the criterion (subsequent complaint), but largely independent of each other, which means that each contributes uniquely to the overall risk score (Jones, 1996). In this study, no variables were excluded from the analysis for reasons of multi-collinearity.

Analysis

Logistic regression is the preferred statistical procedure to use when attempting to predict a discrete outcome such as recidivism versus non-recidivism from a set of predictor variables that may be continuous, discrete, dichotomous, or a mixture (Norman & Streiner, 1986; Vogt, 1993). Logistic regression answers the same questions as discriminant analysis. Unlike discriminant analysis, however, logistic regression is more flexible because it makes no assumptions about the distribution of the predictor variables, i.e., the predictor variables do not have to be normally distributed, linearly related to the dependent variable, or of equal variance in each group. Unlike the statistical procedure called Logit, the predictor variables do not have to be discrete in a logistic regression analysis.

In logistic regression, the data are transformed by taking their natural logarithms so as to reduce non-linearity (Norusis, 1992). Maximum likelihood methods are used instead of the more commonly known least-squares method to calculate the logistic coefficients. Logistic coefficients are selected that would make the sample data most likely to have been observed. The logistic coefficients are called *maximum likelihood coefficients* and have a different interpretation than least squares regression coefficients found in linear regression techniques. In linear regression, the coefficient tells the amount of change expected in the dependent variable for a one-unit change in the independent variable. In logistic regression, the coefficient can be interpreted as the change in the log odds of being in the category of interest on the dependent variable (the category coded as 1), associated with a one-unit change in the independent variable, controlling for all other predictors in the model (Demaris, 1992; Norusis, 1992). Analogous to the coefficient produced by linear regression, the logistic coefficient can be interpreted with regard to direction, relative magnitude, and statistical significance (Nichols-Casebolt & Garfinkel, 1991). A positive coefficient increases the odds of being in the category of interest and a negative coefficient decreases the odds. The goodness of fit test is used to choose the model that does the best job of prediction with the fewest predictors.

Table 24 shows the best predictors of subsequent complaint for each group. The best predictive model for Group 1 includes five variables, all statistically significant at the $p \leq .05$ level. These are current offense is a status offense, child has relationship problems with family, child has been assaultive, child used drugs in the past year, and juvenile ever truant or extensive absenteeism. For Group 2, the best model also includes five variables, three which are also statistically significant predictors for Group 1. The five statistically significant predictors for Group 2 are:

child has relationship problems with family, juvenile ever truant or extensive absenteeism, juvenile used drugs in the past year, juvenile has behavioral or mental health problems, and juvenile is not currently enrolled in a public, private, or home school on a regular basis. For Group 3, the best model contains 6 statistically significant predictors: child has relationship problems with family, juvenile uses drugs in the past year, juvenile ever truant or extensive absenteeism, juvenile run away, juvenile has delinquent friends, and number of complaints.

Once the best model was determined using stepwise logistic regression, another regression equation was run with simultaneous entry of the predictor variables. This second model was used to provide the maximum likelihood coefficients for the predictor variables. Table 24 presents the results of subsequent complaint regressed on the predictor variables that constitute the best models for Groups 1, 2, and 3. For this analysis, status offense was coded as 1, therefore, a positive coefficient indicates a positive influence on the odds of a subsequent complaint. The results show that all of the predictor variables have a positive influence on the odds of a subsequent complaint. The magnitude of the coefficients in each column can be compared to determine the strongest predictors. For instance, for the 1st referral group, the strongest predictor is drug use, followed by school attendance, and the child's relationship with family.

Table 24. Subsequent Complaint Regressed on the Predictive Variables - Maximum Likelihood Coefficients of Statistically Significant Variables for Each of the Three Groups

Predictor Variables	1st Referral Population (N = 6,932)	2nd Referral Population (N = 3,543)	3+ Referral Population (N = 3,954)
Current offense is a status offense	.5160 (.08)	--	--
Juvenile's relationship with his/her family involves frequent/intense conflict or is alienated/assaultive (known or suspected)	.6616 (.07)	.5660 (.09)	.3509 (.09)
Juvenile has ever been assaultive.	.5175 (.06)	--	--
Juvenile used, or is suspected of using drugs within the past year.	.8060 (.06)	.4701 (.08)	.5619 (.09)
Juvenile ever truant or extensive absenteeism from school.	.7392 (.06)	.4835 (.09)	.2328 (.09)
Juvenile not currently enrolled in a public, private, or home school on a regular basis.	--	.4350 (.11)	--
Juvenile has behavior problems/ mental health issues.	--	.4337 (.08)	--
Friends involved, or suspected to be involved, in delinquency.	--	--	.3897 (.10)
Number of prior complaints, this assessment.	--	--	.4853 (.12)
Runaway, runaway attempts, known or suspected.	--	--	.3292 (.09)

Note. All coefficients are maximum likelihood estimates. Standard errors are in parentheses. All predictors are significant at the $p < .00001$ level.

The Calculation of Predicted Probabilities

The next step in the analysis was to calculate predicted probabilities using the maximum likelihood coefficients from the logistic regression equations presented in Table 24 to predict the likelihood of subsequent offense. The predictions are calculated for an independent sample, the validation sample, as opposed to the estimation sample from which the equation was derived. The maximum likelihood coefficients are used in the following equation to predict the probability of subsequent complaint (*e* is the number 2.718282) (Menard, 1995).

$$Y = \frac{e^{A + B_1 X_1 + B_2 X_2 + \cdots}}{1 + e^{A + B_1 X_1 + B_2 X_2 + \cdots}}$$

For Group 1, the maximum likelihood coefficients for the five predictive variables shown in Table 24 were entered into the above equation to produce the probability of subsequent complaint. As shown in Table 25, the predicted probabilities were able to differentiate a high risk group with three times the rate of subsequent complaint than the low risk group.

Table 25. Subsequent Complaint Rates for the 1st Referral Group Using Predicted Probabilities

Probability of Subsequent Complaint	Classification	Cases (%)	Subsequent Complaint Rate
0 - .40	low	2,712 (63.7)	.24
.41 - .70	medium	1,196 (28.1)	.53
.71 plus	high	349 (8.2)	.76
Total		4,257 (100)	.36

Note. Probabilities of membership in the subsequent complaint group are used to define three levels of subsequent complaint risk: low (< 40% chance of subsequent complaint) medium (41% to 70%) and high (> 71% chance).

The predicted probabilities for Group 2 are reported in Table 26. These results show the model has less of a discriminating ability for Group 2 than for Group 1 reported in the table above.

Table 26. Subsequent Complaint Rates for the 2nd Referral Group Using Predicted Probabilities

Probability of Subsequent Complaint	Risk Classification	Number of Cases (%)	Subsequent Complaint Rate
0 - .40	low	397 (18.6)	.43
.41 - .70	medium	934 (43.7)	.58
.71 plus	high	807 (37.7)	.75
Total		2,138 (100)	.62

Note. There were no individuals in Group 2 who achieved a probability score below .31, thus the low risk group has a slightly high subsequent complaint rate.

The predictive probabilities reported in Table 27 for Group 3 show a very different distribution in terms of the three levels of risk than is seen in the previous two tables. In Table 27, slightly more than three quarters of the sample is classed as high risk for subsequent complaint.

Table 27. Subsequent Complaint Rates for the 3rd Referral Group Using Predicted Probabilities

Probability of Subsequent Complaint	**Risk Classification**	**Number of Cases (%)**	**Subsequent Complaint Rate**
0 - .50	low	87 (3.7%)	.46
.51 - .70	medium	456 (19.5)	.66
.71 plus	high	1,778 (76.8)	.82
Total		2,331 (100)	.77

Note. There were no individuals in Group 3 who achieved a probability score below .41, thus the low risk group has a slightly high subsequent complaint rate.

Although the predicted probability method using the maximum likelihood coefficients from the logistic regression equations produced better discriminating ability than the current methods of risk prediction (NCCD 1st referral and the post adjudication score) and the probation officers' judgments, it is computationally complex and requires a computer for scoring. One of the goals of this research was to produce a simple scoring procedure that uses whole numbers, therefore, the next step in the analysis was to develop a simplified method of scoring.

Simplifying the Scoring Procedure

Unit weighting, otherwise referred to as the Burgess method, was used to convert the maximum likelihood coefficients from the logistic regression equation into whole and simple numbers. For Group 1, for instance, if the juvenile's current offense was a status offense they would receive a one toward their score; if it was not a status offense they would receive a 0. Each of the five items for Group 1 was coded similarly as 1 or 0, and then summed to provide a score ranging

from 0 through 5, with a 5 indicating higher risk for subsequent complaint. See Appendix E for an example of the simplified scoring instrument for 1st referral juveniles. Based on ability to differentiate among the three levels of subsequent complaint, the simplified scoring method proved better than the current NCCD method of classification and probation officer judgment. The one advantage the predicted probability method has over the simplified unit weighting procedure is that it classifies a larger group as low-risk, whereas the simplified method classifies a large group as medium risk. This issue is important if resources are scarce and the objective is to target those in the higher risk groups.

Table 28. Subsequent Complaint Rates for the 1st Referral Using the Simplified Scoring

Risk Score	Classification	Cases (%)	Subsequent Complaint Rate
0	low	1,447 (34.0)	.19
1-3	medium	1,008 (57.8)	.41
4-5	high	349 (8.2)	.77
Total		4,257 (100)	.37

Using the maximum likelihood coefficients from the logistic regression equation that was estimated for Group 2, in a unit weighting scoring procedure, subsequent complaint rates among the three respective classifications of low, medium, and high risk are 48%, 69%, and 84%.

Table 29. Subsequent Complaint Rates for the 2nd Referral Using the Simplified Scoring Process

Risk Score	Classification	Cases (%)	Subsequent Complaint Rate
0	low	871 (40.7)	.48
1 to 4	medium	1,081 (50.6)	.69
5	high	186 (8.7)	.84
Total		2,138 (100)	.62

Using the maximum likelihood coefficients that was estimated for Group 3 in a unit weighting scoring procedure, subsequent complaint rates among the three respective risk classifications are 46% for low, 67% for medium, and 83% for high risk classifications (see Table 30).

Table 30. Subsequent Complaint Rates for the 3+ Referral Using the Simplified Scoring Process

Risk Score	Classification	Cases (%)	Subsequent Complaint Rate
0	low	87 (3.7)	.46
1-2	medium	605 (26.0)	.67
3-6	high	1,639 (70.3)	.83
Total		2,331 (100)	.77

While the simplified scoring procedure produces results comparable to the predicted probability method in terms of subsequent rate of complaint, and superior to the current method of risk assessment and probation officer judgment, it is consistently poorer at distributing each group among the three categories of risk. This can easily be seen in the next section that compares the four methods.

Comparing the Predictive Validity of Four Different Methods

Table 31 presents the results of four different methods of predicting risk of subsequent complaint for juveniles with one referral: probation officer judgment, the current assessment method, a predicted probability method using a reduced set of variables, and a simplified scoring procedure that applies a unit weighting procedure to the variables included in the predicted probability method.

Table 31. Subsequent Complaint Rates by Different Methods of Prediction for Group 1

Risk Prediction	Probation Officer Judgement		NCCD Assessment Instrument		Predicted Probabilities		Simplified Scoring Process	
	%	Rate	%	Rate	%	Rate	%	Rate
Low	55	.26	16	.22	64	.24	34	.19
Medium	32	.48	73	.34	28	.53	58	.41
High	12	.69	11	.54	8	.76	8	.77

Note. The percent columns refer to percent classified and is rounded to the nearest whole number, thus it may not add up to 100. Rate refers to rate of subsequent complaint.

Table 31 shows that the simplified scoring procedure produces a low risk group with a lower rate of subsequent complaint than the probation officer estimation or the current assessment method, and a high risk group with a higher rate of subsequent complaint. The only disadvantage of the simplified scoring procedure versus the predicted probability procedure is the distribution among the three categories. The simplified scoring procedure tends to rate a large proportion of juveniles as medium risk, 58% versus 28%.

Table 32. Subsequent Complaint Rates by Different Methods of Prediction for Group 2

Risk Prediction	Probation Officer Judgement		Post Adjudication Assessment		Predicted Probabilities		Simplified Method	
	%	Rate	%	Rate	%	Rate	%	Rate
Low	28	.48	96	.73	19	.43	41	.48
Medium	48	. 62	3	1.0	44	.58	51	.69
High	24	.78	1	1.0	38	.75	9	.84

Note. The percent columns refer to percent classified and is rounded to the nearest whole number, thus it may not add up to 100. Rate refers to rate of subsequent complaint.

Table 32 presents the same analysis as does Table 31, except it is for those juveniles with two referrals. The level of differentiation for Group 2 using the predicted probability method and the simplified scoring method is similar to the probation officer's judgment. The advantage of the predicted probability method over the simplified scoring method is that it classifies fewer juveniles as medium risk and many more as high risk.

Table 33. Subsequent Complaint Rates by Different Methods of Prediction for Group 3

Risk Prediction	Probation Officer Judgement		Post Adjudication Assessment		Predicted Probabilities		Simplified Method	
	%	Rate	%	Rate	%	Rate	%	Rate
Low	15	.58	80	.79	4	.46	4	.46
Medium	45	.76	14	.86	19	.66	26	.67
High	39	.85	6	.92	77	.82	70	.83

Note. The percent columns refer to percent classified and is rounded to the nearest whole number, thus it may not add up to 100. Rate refers to rate of subsequent complaint.

Table 33 presents the same analysis presented in Table 32, except it is for juveniles with three or more referrals. The predicted probability method and simplified method have lower rates of subsequent complaint among those classified as low risk, and the predictive probability method is able to classify fewer juveniles as medium risk and more as high risk.

Examining the results presented in tables 31 through 33, the predicted probability emerges as the superior method of classification. The reason for this is that it discriminates with more accuracy among the three levels of risk than the current method, it produces a more precise indicator of risk than the simplified method (a percentage likelihood rather than a number from one to five), and it classifies fewer juveniles in the medium level of risk and more in the low and high levels than does the simplified method. Thus, the recommended procedure for risk assessment is the predicted probability method.

Sensitivity Analysis

In this section data are presented to determine the discriminating ability of the recommended "predicted probability" method of risk assessment when used with various subgroups of the juvenile population to predict subsequent complaint. Tables 34, 35, and 36 compare the differentiation ability of the proposed instrument for gender, age, and race/ethnicity with the classification abilities of the probation officers. All of the sensitivity analyses are based on data from the validation sample, which is independent of the estimation sample.

The analysis relating to age was designed to differentiate between juveniles at or near the automatic transfer age. Thirteen years of age was used as the dividing point for the sensitivity analysis on age. Arizona Senate Bill 1446 requires the County Attorney to bring criminal prosecution in Adult Court if the juvenile is 15 years or older, and accused of a serious crime such as first or second degree murder, forcible sexual assault, armed robbery, and other violent crimes involving a deadly weapon or resulting in serious physical injury (information on transfer to adult court was provided by Ms. Lynn Wiletsky, Program Manager, Juvenile Justice Services Division, Arizona Supreme Court, July 30, 1998). Prosecution as an adult is also permitted for juveniles 15 years of age if the juvenile is accused of certain felony offenses, or if the juvenile has been defined as a *chronic* offender. A second felony offense committed by a juvenile 14 years of age or older carries a mandatory disposition of juvenile intensive probation (JIPS), with the possibility of commitment to ADJC.

Tables 34, 35, and 36 show that overall, empirical risk assessment using the predicted probability method provides greater discrimination for classifying the three levels of risk than do probation officers, when examining subgroups by gender, age, and race/ethnicity. Each of the tables should be evaluated on two factors: the percent classified as low, medium and high; and the subsequent complaint rate within each level of risk. For example, in Table 34, the first column under female shows that the predicted probability method of risk assessment classifies 56% of female first referrals as low risk, 32% as medium risk, and 12% as high risk. The subsequent complaint rates for the juveniles so classified are, beginning with low, 20%, 42%, and 76%. Thus, we have method of risk prediction that identifies a high risk group with almost four times the rate of subsequent complaint than the low risk group. The probation officers, in comparison, classified 58% of 1st referral females as low risk with a 23% rate of subsequent complaint, 31% as medium risk with a 46% rate of subsequent complaint, and 10% as high risk with a 64% rate of subsequent complaint. Thus, the predicted probability method is better at separating out groups of juveniles with vastly different rates of subsequent complaint. The predicted probability method is superior across subgroups, with the exception of Native Americans with 3 or more referrals.

Table 34. Percent Classified and Subsequent Complaint Rates by Gender - A Comparison of Risk Assessment Using Predicted Probabilities (PP) and Probation Officer Judgment (PO)

Risk Prediction	Female						Male					
	1st Referral		2nd Referral		3 + Referral		1st Referral		2nd Referral		3 + Referral	
	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO
Low	56% .20	58% .23	14% .46	33% .49	2% .33	20% .61	68% .26	55% .27	21% .42	26% .47	5% .45	14% .59
Medium	32% .42	31% .46	62% .56	46% .60	15% .58	44% .69	18% .55	34% .49	62% .65	49% .63	21% .67	44% .78
High	12% .76	10% .64	25% .75	21% .75	83% .87	36% .82	15% .73	11% .70	17% .80	25% .79	74% .85	41% .88
Total	.34	.35	.59	.60	.72	.72	.38	.39	.63	.63	.80	.79

Note. PP = Predicted Probability method of risk assessment; PO = Probation Officer Judgment. The number of juveniles classified can differ slightly between the PP and PO classifications, due to the requirement that data be available for all variables included on the proposed risk/assessment instrument. Percentages are rounded to the nearest whole number, therefore, column percentages may not add up to 100%. The percentages in each cell are the percent classified, and the second number on the bottom of each cell is the rate of subsequent complaint.

Table 35. Percent Classified and Subsequent Complaint Rates by Age -- A Comparison of Risk Assessment Using Predicted Probabilities (PP) and Probation Officer Judgment (PO)

Risk Classification	Juveniles 13 Years of Age and Younger						Juveniles 14 Years of Age and Older					
	1st Referral		2nd Referral		3 + Referral		1st Referral		2nd Referral		3 + Referral	
	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO
Low	73% .21	58% .22	22% .43	29% .46	5% .48	15% .60	57% .27	55% .28	15% .41	28% .51	2.5% .22	18% .59
Medium	22% .53	31% .40	62% .61	47% .59	20% .67	44% .75	33% .52	34% .53	62% .63	49% .66	16.5% .58	45% .76
High	5% .80	11% .68	16% .82	25% .80	75% .83	41% .87	10% .75	11% .68	23% .74	23% .75	81% .87	38% .84
Total	.31	.32	.61	.61	.78	.78	.40	.41	.62	.63	.76	.76

Note. PP = Predicted Probability method of risk assessment; PO = Probation Officer Judgment. The number of juveniles classified can differ slightly between the PP and PO classifications, due to the requirement that data be available for all variables included on the proposed risk/assessment instrument. Percentages are rounded to the nearest whole number, therefore, column percentages may not add up to 100%. The percentages in each cell are the percent classified, and the second number on the bottom of each cell is the rate of subsequent complaint.

Table 36. Percent Classified and Subsequent Complaint Rates by Race - A Comparison of Risk Assessment Using Predicted Probabilities (PP) and Probation Officer Judgment (PO)

Risk Classification	Black						Hispanic					
	1st Referral		2nd Referral		3 + Referral		1st Referral		2nd Referral		3 + Referral	
	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO
Low	70% .29	53% .29	19% .50	24% .64	6% .62	13% .63	61% .29	56% .30	16% .48	26% .53	4% .39	16% .61
Medium	22% .60	33% .50	46% .73	53% .63	21% .77	41% .80	31% .56	33% .54	63% .61	46% .60	19% .65	42% .75
High	8% .95	14% .73	35% .79	23% .87	73% .85	46% .88	8% .70	11% .66	20% .82	27% .78	77% .84	41% .89
Total	.41	.42	.70	.69	.82	.82	.41	.42	.63	.63	.79	.79

Note. PP = Predicted Probability method of risk assessment; PO = Probation Officer Judgment. The number of juveniles classified can differ slightly between the PP and PO classifications, due to the requirement that data be available for all variables included on the proposed risk/assessment instrument. Percentages are rounded to the nearest whole number, therefore, column percentages may not add up to 100%. The percentages in each cell are the percent classified, and the second number on the bottom of each cell is the rate of subsequent complaint.

Table 37. Percent Classified and Subsequent Complaint Rates by Race - A Comparison of Risk Assessment Using Predicted Probabilities (PP) and Probation Officer Judgment (PO)

Risk Classification	American Indian						White					
	1st Referral		2nd Referral		3 + Referral		1st Referral		2nd Referral		3 + Referral	
	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO	PP	PO
Low	64% .20	55% .19	17% .41	21% .54	5% .75	13% .62	65% .22	57% .24	20% .40	31% .44	4% .40	17% .58
Medium	29% .46	34% .44	49% .55	57% .61	18% .75	37% .76	27% .51	33% .45	60% .62	48% .64	20% .62	42% .75
High	7% .71	12% .50	35% .69	22% .58	77% .81	49% .86	8% .80	10% .71	20% .77	22% .79	77% .81	37% .84
Total	.31	.31	.58	.59	.80	.79	.35	.35	.61	.61	.76	.76

Note. PP = Predicted probability method; PO = Probation Officer Judgment. The number of juveniles classified can differ slightly between the PP and PO classifications, due to the requirement that data be available for all variables included on the proposed risk/assessment instrument.

Prior to this study, it was hypothesized that items on the risk assessment would correlate highest with the total score of the scale formed by those items. Secondly, the items of the scale would be moderately correlated with one another, and finally, that items of the scale would correlate to a lower degree with variables related to the participant's background such as age, race, and gender. These hypotheses were used to further assess bias with regard to age, gender, and race/ethnicity in the proposed risk assessment method. This a type of priori, or hypothesis testing method of factor analysis that is designed to show whether a defined structure of hypotheses will adequately account for the pattern of correlations observed among a specific set of variables. In this sense, factorial validity becomes a form of item analysis. If items on the risk assessment scale are a valid measure of the construct that the instrument is purported to measure, i.e., subsequent complaint, the items should have higher correlations with the scale's total score than with other items (Nunnally, 1978). If this occurs, the scale's items collectively imply that each item is in some way measuring the construct in question and not some other construct. In the event that the items of the scale correlate to a higher degree with the variables related to the juvenile's background, such as gender and race, this indicates bias. These items can then be revised or reconsidered for their contribution to predict subsequent complaint. This process is not only central to factorial validity, but is also crucial to the concepts of divergent and convergent construct validity. Tables 38, 39, and 40 support the validity of the proposed 5-item risk/needs assessment instrument.

Table 38. Zero-Order Correlations Among Predictor and Outcome Variables for Group 1

Variable	1	2	3	4	5	6	7	8	9	10	11
1.Drug Use	1.0										
2. Truancy	.35	1.0									
3.Family Relationship	.23	.35	1.0								
4.Status Offense	.08	.23	.15	1.0							
5.Assaultive	.10	.19	.30	-.00	1.0						
6.Gender	-.03	.11	-.08	-.23	.05	1.0					
7.Race	.02	-.04	.04	-.06	-.05	-.00	1.0				
8.Age at 1st Referral	.27	.21	.02	.10	-.03	-.07	.05	1.0			
9.PO Rating	.33	.38	.45	.08	.33	.03	-.19	.01	1.0		
10. NCCD Score	.23	.15	.09	.11	.17	.01	-.00	.21	.16	1.0	
11. Score on Proposed Instrument	.56	.76	-.66	.38	.45	-.12	-.02	.14	.51	.20	1.0

The correlation matrices for all three groups show a pattern of item correlation being highest with the total score of the instrument, moderate with the total score of other measures designed to measure the same construct (probation officers judgment and the current instruments), and lowest with factors related to the individual's background such as gender, race, and age. Notably, the correlation between the proposed instrument total scale score and the post adjudication total score is very weak, indicating the post adjudication instrument has poor validity.

Table 39. Zero-Order Correlations Among Predictor and Outcome Variables for Group 2

Variable	1	2	3	4	5	6	7	8	9	10	11
1.Drug Use	1.0										
2. Truancy	.32	1.0									
3.Family Relationship	.23	.32	1.0								
4.Status Offense	.07	.20	.15	1.0							
5.Assaultive	.11	.08	.24	-.05	1.0						
6.Gender	-.02	-.13	-.11	-.25	.04	1.0					
7.Race	-.04	-.05	.01	-.03	-.04	.03	1.0				
8.Age at 1st referral	.24	.18	.08	.07	-.01	-.10	.06	1.0			
9.PO Rating	.28	.29	.38	.01	.22	.06	.02	.05	1.0		
10. Post Adjudication Score	.08	.04	.02	-.10	.03	.07	.03	.02	.13	1.0	
11. Score on Proposed Instrument	.71	.56	.59	.39	.48	-.12	.18	.18	.38	.02	1.0

Note. The bivariate correlations with the predicted probability score and the variable behavior problems/mental health issues = .26, and not currently enrolled in school = -.23.

Table 40. Zero-Order Correlations among Predictor and Outcome Variables for Group 3

Variable	1	2	3	4	5	6	7	8	9	10	11
1.Drug Use	1.0										
2. Truancy	.32	1.0									
3.Family Relationship	.22	.24	1.0								
4.Status Offense	-.01	.12	.05	1.0							
5.Assaultive	.13	.09	.24	-.09	1.0						
6.Gender	-.04	-.12	-.12	-.17	.03	1.0					
7.Race	-.00	-.02	.06	.01	-.03	-.04	1.0				
8.Age at 1st referral	.13	.11	.04	-.08	-.09	-.16	.05	1.0			
9.PO Rating	.25	.26	.35	-.03	.22	.07	-.05	-.05	1.0		
10. Post Adjudication Score	.08	.06	.05	-.13	.15	.05	-.05	-.24	.22	1.0	
11. Score on Proposed Instrument	.51	.52	.60	.29	.47	.-.13	-.00	.07	.34	.08	1.0

Note. The bivariate correlation between the predicted probability score and the variables: delinquent friends = .58, number of prior complaints = .30, and runaway attempts = .52.

CHAPTER FOUR

RELIABILITY

Reliability refers to the consistency of repeated observation of the same phenomenon by multiple observers. If a procedure is reliable, then multiple observations of the same occurrence should lead to perfect agreement among the observers. Valid prediction is not possible without measures that are highly reliable (i.e., greater than 80% agreement).

One of the requirements of this study was to assess the reliability of the risk/needs instrument. The method proposed was to measure reliability by examining how two or more probation officers scored the same cases using the risk/needs instrument. The established method for inter-rater reliability is based on the notion that, "in order to verify that behavior is being observed consistently, different observers should independently observe and record the same behaviors (Bloom, Fischer, and Orme, 1995 p. 141).

Methodology

The design of the study utilized six "actual" cases that were randomly selected from Pima County that had a disposition on either the third or fourth complaint in 1997. The file of each juvenile was divided into two files by Mr. Steve Ballance, research and evaluation specialist at Pima County Juvenile Court. The file of each juvenile was divided into a "first referral" file and a "disposition file." Information not pertinent to probation officer updates or reports, psychological information, arrest data, and school information was gleaned out for simplicity sake. The 12 files, two for each of six juveniles, were then classified as either "Red" or "Blue" depending on whether they were first referral or disposition.

The probation officers that reviewed these files were the same probation officers that participated in the opinion survey for this study. The reason for selecting the same probation officers was that they were selected randomly and were familiar with the project. Of these 54 officers, 23 agreed to participate in the reliability study. The probation officers were from Cochise, Maricopa, and Pima Counties. Each probation officer was provided a "Red" or "Blue" packet from each child, along with six blank risk/needs instruments, and an instruction sheet. Each probation officer was asked to rate three first referral cases and three post adjudication cases.

The data collected on the sample cases using the risk/needs instrument were entered into an SPSS spreadsheet. Data from the probation officers was recoded to exclude missing or unknown data and "suspected" responses were coded as "Yes" responses. Frequency distributions were run on each juvenile case and on individual items of the risk/needs instrument. The data were then entered into an Excel Spreadsheet to permit calculation of percent agreement using the following formula:

$$\frac{\text{\# Agreements}}{\text{\# Agreement + \# Disagreements}} \times 100 = \text{Percent Agreement}$$

The formula takes the number of agreed upon responses as the numerator, and the total number of responses as the denominator. For instance, if 6 probation officers rated the item "used alcohol within the past year" as yes, and four probation officers rated it as no, the formula would be calculated as 6/10 = 60% agreement. The following table is a result of the percentages derived from these calculations. A review of the literature suggested that 80% to 85% is a reasonable expectation as an upper limit for inter-rater reliability (Johnson & Bolstad, 1973). The results are separated by "1st referral" and "disposition" samples. The "1st referral" sample has a percentage of agreement ranging from 69.2% to 100%, with an average of 87.6%. The "disposition" sample has a percentage range from 71.9% to 100%, with an average of 86.2%.

Table 41. Percentage Interrater Agreement for Items on the Risk/Needs Instrument

Items	1st Referral	Disposition	Overall
Any no shows this referral?	78.0	94.9	87.1
Post-adjudication assessment?	98.1	96.8	97.4
Was a weapon involved?	98.4	84.6	91.4
Child related to any victim	96.1	93.4	94.6
Treatment for victim's injuries	92.6	97.4	95.4
Used alcohol within past year?	95.4	87.5	91.3
If yes, or suspected, recurring/serious disruption	81.5	81.2	81.4
Used drugs within the past year?	83.8	87.2	85.6
If yes, or suspected, recurring/serious disruption	86.4	97.1	92.9
Runaway/runaway attempts?	97.4	78.3	87.1
Child ever neglected, abused (physical, sexual)	78.9	86.7	83.1
Subject of a dependency petition?	92.9	90.4	91.7
Child ever assaultive?	87.8	94.4	91.3
Child steals from family/friends?	85.7	76.9	81.1
Friends involved in delinquency?	89.3	84.3	86.9
Gang involvement or association?	83.7	76.9	80.5

Items	1st Referral	Disposition	Overall
Behavior problem/mental health issues?	76.9	76.6	76.7
Ever RTC placed/psychiatric hospitalized?	97.4	90.2	93.3
Child currently employed?	100	85.2	91.9
Job skills assistance needed?	69.4	91.1	79.8
Child needs independent living assistance	80.4	91.4	86.2
Currently enrolled in public, private or home school?	95.1	98.1	96.5
Ever dropped out of school ?	82.6	87.2	84.7
Ever truancy or excessive absenteeism?	92.9	93.3	93.1
Ever behavioral problems at school?	92.4	90.2	91.3
Ever suspended/expelled from school?	81.6	86.7	84.0
Ever failed or failing at one or more classes?	88.4	90.0	89.1
Services received/needed: mentally handicapped	96.0	91.8	93.7
Services received/needed: physically handicapped	96.0	93.7	94.7
Services received/needed: emotionally handicapped	84.7	77.4	80.9
Services received/needed: learning disabled	83.0	86.7	84.9
Services received/needed: English as a second language	93.2	95.4	94.3
Services received/needed: gifted/honors	100	92.4	95.6
Criminal/delinquent history	69.2	75.0	72.4
Recent significant family problems	77.5	72.9	75.3
Adults have drinking problem	100	77.1	87.1
Adults use drugs	100	86.5	92.1
Parents/guardians concerned	86.9	85.2	86.1
Parents/guardians cooperative	85.4	76.5	81.1
Parents/guardians knowledgeable about child's activities	70.9	72.7	71.8

Items	1st Referral	Disposition	Overall
Any resident authority changed within last 5 years	88.5	87.2	87.9
Juvenile moved in past year	78.4	93.7	85.9
Child's relationship with family	78.3	71.9	75.0
Family's relationship with child	81.7	72.3	76.8
Parents/guardians in need of parenting skills	86.7	82.7	84.5
Total Percentage	87.6	86.2	86.8

Table 42 lists the items determined most predictive of re-offense in the validation study. These items had a percentage of agreement ranging from 71.9% to 98.1%.

Table 42. Percentage of Interrater Agreement for the Items Used in Assessing Risk

Items	1st Referral	Disposition	Overall
Used drugs within the past year?	83.8	87.2	85.6
Child ever assaultive?	87.8	94.4	91.3
Ever truancy or excessive absenteeism?	92.9	93.3	93.1
Juvenile's relationship with family involves conflict or is assaultive (known or suspected	78.3	71.9	75.0
Juvenile not enrolled in school on a regular basis	95.1	98.1	96.5
Juvenile has behavior problems, mental health issues.	76.9	76.6	76.7
Delinquent friends, involved or suspected	89.3	84.3	86.9
Runaway, runaway attempts, known or suspected	97.4	78.3	87.1

Overall, the reliability study confirmed that probation officers are able to review information from a file and make judgments on the risk assessment items that are fairly consistent with one another. It is important to recognize that the medium for the study may not exactly duplicate what is used when probation officers complete the risk/needs assessment instrument. For instance, the study was limited to information in a file while in reality probation officers may incorporate information from an interview with the juvenile. Although there was good reliability or consistency there was also room for improvement. Items that obtained a percent agreement of less than 80% should be re-evaluated. In particular, the items, "the child's relationship with family" and "juvenile has behavior/mental health problems" should have higher rates of inter-

rater reliability since they are two of the items used to predict risk on the proposed revision to the assessment procedure. Further specifying the operational definition of some items, placing the definition with the item on the risk assessment portion of the instrument, and training probation officers in assessment, are some suggestions for improving reliability.

CHAPTER FIVE

UTILITY

It is important for criminal justice policy makers to understand the response to reforms limiting discretion and the reasons behind judicial opposition or support. Few studies address justice decision makers' reactions to these reforms. The purpose of this section is to assess probation officers' and juvenile court judges' attitudes toward risk/needs assessment and its use, and to examine the relationship between support for decision-making reforms and beliefs about the purpose of risk/needs assessment and their perception of their role in the juvenile justice system.

This chapter addresses two questions:

1. To what extent is probation applying the risk/needs assessment instrument in a uniform, consistent manner statewide?

2. To what extent do judges use the instrument in their decision making processes?

The question regarding probation officers' use of the instrument has the function of providing a detailed description of how the risk/needs assessment instrument is being used, the organizational context of the instrument's use, and the procedural and contextual factors that bear on how it is being used. The question concerning judges' use describes the manner in which they use the assessment process in their decision making, what decision guidelines they use, and how the risk/needs assessment instrument facilitates their decision making process.

A random sample of 56 probation officers and 24 juvenile court judges were interviewed (both face-to-face and telephone) for this part of the study. The sample was stratified by county, and to ensure representativeness 70% were chosen from urban areas and 30% from rural. The probation officer's interview guide contains 57 questions (see Appendix C), and the judge's interview guide contains 19 questions (see Appendix D). The probation officer's responses are summarized first, followed by the judge's responses.

Probation Officers' Use and Attitudes about the Arizona Risk/Needs Instrument

Almost all (96.4%) of the probation officers said that they had completed the Arizona risk/needs assessment instrument. They completed it on juveniles assigned to their caseload between 75% to 100% of the time. They, therefore, almost always completed the instrument for just about every juvenile. Almost all (98.2%) said that there was a policy in their organization mandating that the instrument be completed on every juvenile, and 90% said it did not replace a previous report in their unit.

While the overwhelming majority of probation officers (98.2%) said they understood how to complete the instrument, and 62% said the policies and procedures governing the system were clear and complete, they did not understand the scoring system for the first referral score or for the post adjudication score on the 376 screen in JOLTS. About 40% responded negatively to the statement about whether or not they understood these scoring systems. This may be why only some (60%) said that the risk/needs instrument is updated in the 376 JOLTS screen when new information is received regarding a juvenile. This indicates that probation departments need to develop clear policies as to when the instrument is to be completed. In addition, more than half, 57% of the probation officers said that it is often difficult to fill out the instrument due to a lack of reliable information. Twenty-seven percent said that the instrument requires data that are not available. However, only six percent of the probation officers said the instrument was too confusing to complete. The operational definitions of the items should be included with the item on the form to increase the consistency of the information. Training should also be conducted to ensure that the probation officers know how to complete the instrument and understand its utility.

The problems the probation officers had with filling out the instrument are not due to a lack of training: 91% said they had received training on how to complete the instrument and only 12% felt that they had not received enough training to accurately complete the risk/needs assessment process. The types of training they said they received included classroom, hands-on group instruction with a manual, and training at the academy. The majority (60%) said the duration of the training was one to two hours or less. Only 16% said it lasted one day and 5% said it lasted more than one day.

Do Probation Officers Use the Risk/Needs Assessment Instrument?

Although just about all probation officers fill out the risk/needs assessment instrument, the majority (64%) say they do not use it. Eighty-four percent said that they do not use the risk score to determine the amount of supervision they give a client, and 70% said the instrument plays a minor or very minor role when they use it.

There were a wide range of reasons why probation officers do not use the instrument. One of the most frequently cited reasons is they rely on their personal knowledge of the juvenile and family. One probation officer characterized this when he said "I don't use it because I have other tools I rely on more heavily like the child's profile, contacts with the child and family and other agencies, interviews with the family and juvenile."

Many probation officers felt that the instrument did not contain enough information. One probation officer said he did not use it because "it does not address everything that is applicable to the child, like mental illness, outside stressors, or family dynamics." Over 80% of the probation officers said the instrument does not assure that the offender will get the assistance needed for success. This type of response goes along with the feeling that yes–no answers and numbers do not contain useful information; they prefer the written comments.

Another fairly consistent response was that the scores are not accurate. Several who gave this response felt the scores were coming out too low. As one probation officer said: "Because the scores are not coming out as they should for our kids (for sex offenders), they come out too low." Another used the score, as he said, if it is high enough, "but if they score lower, I try to avoid the score." A number of the probation officers said that their assessment differed from the risk score specified by the instrument in quite a few cases, but less than 50%. When they differed, in 70% of the cases, they decided that the juvenile was a higher risk than what the score specified. The reasons given for why they differed were that the probation officer knew the juvenile on a personal level, the instrument does not look at the best predictors and aggravating factors, and the probation officer looks at conditions at the home, and whether the juvenile has a sense of remorse. For example, one respondent said: "If they have a negative attitude toward authority or rules they would be a higher risk, and I don't think that comes across on the instrument." Another said "Because we know them on a more personal basis, we see their behavior, their attitude, and their performance on a daily basis which seems more accurate than the questions on the instrument."

Many probation officers said it is "useless" and "worthless" and they fill it out because they have to. A number of respondents said they fill it out after they had already made a decision about the juvenile. This was expressed by one probation officer who said: "The risk/needs is done after we've seen the kid. I try to assess the family myself. The risk/needs assessment is done after you've interviewed the juvenile and assigned the consequences."

Several probation officers said they didn't use the instrument because they didn't know what the numbers mean. However, when asked on the survey if they referred to the information contained in the instrument when completing reports, 55% were negative, but 44% were positive. As one probation officer said: "Because I'm not sure what the score means. I use the information from the questions on the instrument, but not the score."

A number of agree - disagree statements in addition to the open-ended questions were directed at why the probation officers used or did not use the instrument. Some of these added new reasons while others supported what they said in the open-ended questions.

The majority of the respondents felt that the risk/needs instrument was useful in providing initial insight about the offender (66%, see Table 43) and in identifying high risk offenders (56%), but only 25% thought it was useful in making sure high risk cases get intensive supervision.

The probation officers were quite emphatic that the risk/needs instrument should not be used to help supervisors evaluate probation officers (75% oppose - see Table 43). They also felt strongly about giving positive rewards for properly completing it (86% disagree); and giving negative evaluations to probation officers who do not properly complete the instrument (49% oppose). Also, probation officers do not think the risk/needs instrument is helpful in managing their case loads (78%), or protecting probation officers from blame (82%).

Probation officers were ambivalent about whether the instrument was useful in justifying the supervision level to the public or legislature; slightly more agreed to this statement (45%)

compared to those who disagreed (37%). Finally, a majority (55%) felt that the risk/needs instrument was time consuming.

Table 43. Reasons for Using or Not Using the Risk/Needs Assessment Instrument

Statement	Agree		Neutral		Disagree	
	N	%	*N*	%	*N*	%
The risk/needs instrument is useful in providing initial insight about the offender.	37	66	0	0	19	34
The risk/needs instrument is useful in identifying high-risk offenders.	31	56	4	7	20	36
The risk/needs instrument is useful in making sure high-risk cases get intensive supervision.	14	25	6	11	35	64
The risk/needs instrument is useful in helping supervisors evaluate probation officers.	10	18	4	7	41	75
The reason why a risk/needs instrument should be used is that positive rewards are provided for properly completing the instrument.	6	11	2	4	48	86
The reason why a risk/needs instrument should be used is that negative evaluations are given for failure to properly complete the instrument.	24	44	4	7	27	49
The reason why a risk/needs instrument should be used is that supervisors look more favorable on those who complete the instrument.	22	39	5	9	29	52
The risk/needs instrument is useful in helping officers manage caseloads (i.e., alleviate their time).	18	32	0	0	38	68
The risk/needs instrument is useful in protecting the probation officer from blame.	10	18	0	0	45	82
The risk/needs instrument is useful in justifying the supervision level to the public or legislature.	25	45	10	18	21	37
The risk/needs instrument is time consuming.	31	55	1	2	24	43

Table 44 lists the factors that may detract from successful use of the risk/needs instrument. The two factors that stand out are lack of staff training and poor scoring - the former is surprising because just about all probation officers said they had received training. Of course, the amount of time spent in training was less than one to two hours, which is apparently not enough. Poor scoring and excessive officer workloads also received a majority agreeing, but a smaller majority than the other factors. Forty-eight percent felt that poor policy and procedures were not a

detracting factor, which agrees with the statement noted above that 62% said the policies and procedures governing the system were clear and complete. But, of course, a sizable minority (39%) felt that policy and procedures were a detracting factor.

Table 44. Factors that Detract from Successful Use of the Risk/Needs Instrument

Factor	Agree		Neutral		Disagree	
	N	%	*N*	%	*N*	%
Lack of information	44	79	4	7	8	14
Lack of staff training	35	63	0	0	21	37
Incorrect assessment of some juveniles	44	79	4	7	8	14
Poor scoring procedures of the instrument	31	57	11	21	12	22
Poor policy and procedures	22	39	7	13	27	48
Excessive probation officer workloads	33	59	3	5	20	36

The fact that the probation officers do not think that the risk/needs assessment instrument is useful does not mean that it is not helpful at all; 60% said it was helpful or very helpful. But only parts of the instrument were viewed as helpful. The part that the majority of the probation officers found helpful was the section relating to the family and school. One probation officer summarized what was helpful as follows: "the section on the family, the comments section about the family and the comments section about the juvenile's performance and behavior in school, and the question about whether the juvenile ever tried to commit suicide." The written comments in particular were considered helpful.

The second most often mentioned part that probation officers considered helpful was the part dealing with the juvenile's history. This includes the prior record and recommendations by probation officers. As one probation officer stated: "Quick reference to prior drug use, delinquency, social information is helpful. Put probations officer's opinions and questions at the end." The least helpful part overwhelmingly was the scoring. A number of probation officers said they had a problem calculating and making sense out of the total risk score. The greatest concern probation officers had in using the instrument centered around its possible inaccuracy. A lot of probation officers questioned its validity. As one probation officer put it: "My concern is that the scoring isn't valid. The invalid scoring results from probation officers thinking the scoring is not valid so why bother with it. Probation officers begin to think its just another piece of paperwork and we are already inundated with paperwork."

Probations Officers' Attitudes about the Accuracy and Validity of the Instrument

It is clear that probation officers believe that their own judgment about juveniles is much better than the risk/needs instrument. Eighty-four percent say that the officer's knowledge is more accurate than the instrument (see Table 45). All of their other responses to related statements were similar. For example, 68% disagreed with the statement that the reason why a risk/needs

instrument should be used is that instruments are more accurate than a subjective evaluation of an offender. Therefore, it is not surprising that 51% did not think the instrument is appropriate for making decisions about the level of supervision. What is somewhat surprising is that only 30% felt the system would be better off without the risk/needs instrument (see Table 45). The probation officers were uncertain about whether or not research has shown that risk/needs instruments are effective; 25% agreed, 31% disagreed, and a full 39% were neutral in response to the statement that research has shown the instrument to be effective. And, while they felt that the probation officer is a better judge of a juvenile's risk than the instrument, 53% believed that the risk/needs system does a good job predicting an offender's likelihood of committing new criminal acts (40% disagreed and 7% were neutral).

Table 45. Probation Officers' Opinions About the Accuracy and Validity of the Instrument

Statement	Agree		Neutral		Disagree	
	N	%	*N*	%	*N*	%
The probation officer's knowledge is more accurate than the instrument.	47	84	6	11	3	5
The reasons why a risk/needs assessment should be used is that instruments are more accurate than the subjective evaluations of an officer.	7	13	11	20	38	68
The reasons why a risk/needs assessment should not be used is that the probation officer's knowledge is more accurate than the instrument.	32	57	13	23	11	20
The reasons why a risk/needs assessment should be used is that experienced officers feel it makes better decisions than they would.	9	16	0	0	47	84
The risk/needs assessment instrument is appropriate for making decisions about the level of supervision.	20	36	7	13	28	51
The system would be better off without the risk/needs instrument.	17	30	11	20	28	50

Perhaps the slight ambivalence in probation officers' responses to some of the statements discussed in the last paragraph is due to the fact that they all thought some components of the instrument accurately predict the client's level of risk. In response to the question about which components do this, three stand out above the 15 things they mentioned. These three are:

- Use of drugs and alcohol;
- Behavior in school (truancy and dropping out);
- Family concern, conditions, criminal activity.

Use of drugs was mentioned 34 times, school behavior 20 times, and family 30 times. The other factors mentioned (in descending order of number of times mentioned) were:

- Prior offenses (13)
- Gang involvement (11)
- Juvenile's attitude (9)
- Whether a weapon was used (8)
- Age at first offense (8)
- Level of the offense (4)
- If a runaway child (4)
- Influence of peers (3)
- If abused as a child (3)
- The probation officer's opinion (3)
- If the victim was hurt (1)

For Which Group of Juveniles is the Risk/Needs Instrument More Useful?

Most of the probation officers who responded to the question about which groups the risk/needs instrument is more useful for said the high risk, serious, repeat and violent offender (11 mentions), but some (7) believed it was more useful for first time offenders. The fairly small number of responses to this question is due to the fact that the majority of probation officers (51%) did not think the instrument was more useful for certain groups than others. Also, overwhelmingly, 94% said they did not have any concerns that the risk/needs instrument might be biased against gender, racial or ethnic groups.

What Improvements Probation Officers Believe Should be Made in the Risk/Needs Instrument?

A very wide range of improvements were recommended by the probation officers. The comments were somewhat evenly divided among several recommendations, but several centered around improving the questions and clarifying how the scores are arrived at. In regard to improving the questions, the following are some of the comments:

1. The questions need to be more clear. Like the question 'Has there been any recent change in authority the last 5 years?' We are asking these questions directly to kids who could be illiterate or not fluent in English, so the language needs to be more basic.

2. The probation officer questions on the 376 screen. Question #2 about school should be reworded. The first part and the second part of the question do not agree. They (juveniles) are either attending school or they're not. I have a problem with question #3 on the 376 screen, occasional users should be users.

3. It would be nice to have an unknown option on all questions. Asking criminal history in the family is a moot point because they usually won't tell you.

4. Maybe there should be something in there about gang activity. Also, go further about parents, like do the parents cover for the child.

5. It is too rigid asking for black and white answers. Expand response possibilities (e.g., drug use, family history, school performance).

The method of scoring the instrument also elicited a number of recommendations. The following are typical:

1. Maybe more guidelines on what the numbered scores mean.

2. If I knew the scoring methodology, what the scoring means.

3. They need to explain the meaning of the different points.

A number of other recommendations dealt with having more questions on the family, increase the comments section, improve the accuracy of the information on the form, shorten and simplify it, and broaden the range of categories (e.g., gang activity, weapons). Some typical comments here are:

1. Categories expanded (family history) such as parents with referral history, address history, drug use history, and time parameters need specification.

2. I guess if after the kid is on probation if in future referrals we didn't have to do the whole questionnaire but just had a comments section to write comments in.

3. Accuracy of updated information.

4. The weapons section can be broken down more, could ask whether the juvenile intended to do harm, get at the severity of the offense.

Perhaps one probation officer expressed what many feel about the instrument when he said: "Most of us hate it. It's difficult to use the way it is set up."

Finally, if promoting uniformity and consistency of decisions about risk statewide is a major goal of the instrument, the probation officers do not believe this is being achieved. Table 46 shows that the majority of probation officers do not think it assures that decisions about risk are uniform statewide and a full 45% believe that the process for completing the instrument varies greatly among probation officers.

Table 46. Uniformity of Decisions and Consistency of Completing the Risk/Needs Assessment Instrument Among Probation Officers

Statement	Agree		Neutral		Disagree	
	N	%	*N*	%	*N*	%
The risk/needs instrument assures that decisions about risk are uniform statewide.	8	15	12	22	34	63
The process for completing the risk/needs instruments varies greatly among probation officers.	25	45	7	13	24	43

Judges' Use of and Attitudes About the Arizona Risk/Needs Assessment Instrument

Twenty-four judges, randomly selected from a list of all juvenile court judges statewide, were interviewed for this section of the report. The median age of the judges is 49 years old; the median length of time served as a juvenile court judge is between four and five years. Fifteen of the 24 judges said they devoted 100% of their time to juvenile matters. The other nine judges devoted an average of 45% of their time to juvenile matters.

Do Judges Use Information from the Risk/Needs Assessment Instrument?

Almost all of the judges interviewed said they used information from the risk/needs instrument. Only one judge said no; the other 23 said they do use it. Forty-six percent said they use it in all cases (see Table 47) and another 17% said they use it in most cases. While 42% said the risk/needs instrument plays a very major role in their decisions when they use it, a large percent (54%) said it plays a minor (38%) or very minor (17%) role.

Table 47. How Often Judges Use Information from the Risk/Needs Assessment Instrument

Number of Cases	*N*	%
In all cases	11	46
In most cases	4	17
In some cases	2	8
In very few cases	3	13
Other	4	17
Total	24	100

Judges tended to believe the risk/needs instrument had been very helpful (see Table 48); 83% said it had been helpful (58%) or very helpful (25%).

Table 48. How Helpful the Risk/Needs Instrument is Perceived by Judges

How helpful	*N*	%
Very helpful	6	25
Helpful	14	58
Unhelpful	3	13
Very unhelpful	1	4
Total	24	100

Judges also overwhelmingly believe the use of a risk/needs instrument to help make decisions about juvenile offenders is a good (54%) or excellent (17%) idea (see Table 48).

Table 49. How Good an Idea is the Use of a Risk/Needs Assessment Instrument for Decision-Making

How good of an idea:	*N*	%
An excellent idea	4	17
A good idea	13	54
An okay idea	4	17
Some concerns	1	4
Major concerns	2	8
Total	24	100

Judges were close to being evenly split on the manner in which the score should be presented to them: 50% said the entire instrument and 46% said a summary score, indicating classification of low, medium, or high risk for re9offense.

While judges say they use the risk/needs instrument, they do not rely on it heavily. As one judge said, he uses it if it "sounds right," but it is not always accurate. Another said: "It depends on who authored it. I know the probation officers and if they don't sign their name, I don't use it because some are not objective and the quality of some probation officers is very poor." This judge added that there have been a number of complaints from the public defenders about it. Another judge who said he was on the committee that selected the issues said he used the criteria but not the form. A number said the instrument was never the determining factor in their decision making, and all but one judge said the system would not be better off without the risk/needs instrument. However, only 42% said use of objective criteria and risk/needs assessment are the most appropriate manner to make decisions about juveniles; the rest were

either neutral (13%) or thought they were not the most appropriate manner to make decisions about juveniles (46%).

Other Factors Used in Judges' Decisions

While judges said they used the risk/needs assessment instrument, they also said that it was only one factor in their decisions. There is a very wide range of factors besides the instrument that judges use. In response to the question about what other factors they used in making decisions, 18 different factors were mentioned. A few were mentioned more times than others (see Table 50), and a few were mentioned only once, but the distribution among items mentioned is fairly uniform. Comments from family members and family situation were mentioned most often (11 times), followed by the juvenile's record/history/type of offense (9 times). A large number of other factors were mentioned between four to six times (see Table 50). The factors that judges used in making decisions are somewhat different than those used by probation officers, and judges did not focus in on the three factors that were stressed by probation officers. For example, probation officers stressed the use of drugs and alcohol, behavior in school, and family factors. Of these three items only family factors were high on the judges list; school attendance was mentioned only once, and use of drugs was mentioned just 4 times.

All judges said they sometimes need to override the risk/needs score if there were extenuating circumstances. When judges did override the risk/needs assessment instrument in making decisions about a juvenile, 41% of the time they assess the youth as a higher risk, 14% of the time as a lower risk, and 18% of the time they said they went higher or lower depending on the circumstances (the remaining 22% said there was not consistent pattern or could not respond).

Concerns About Bias Against Gender, Racial or Ethnic Groups

Most of the judges expressed no concerns that the risk/needs instrument was biased against gender, racial or ethnic groups. Four judges had concerns about possible bias. One judge said after a long pause that undocumented kids have a tougher time but the juvenile court was trying to straighten this out. Another judge said the instrument leans toward detaining and gender could be a factor in prostitution situations. A third judge said it was biased against Native American kids who are not in school. A fourth judge said he believed the instrument was unconstitutional because it included arrests and not just convictions. He added that police officers hassled brown skin kids by arresting them and building up a record, which often went against them on the instrument. He referred to the Court of Appeals of Arizona, Division One case of the *State of Arizona versus David Allen Shuler*, in which the principal issue was whether the trial court may properly consider prior arrests as an aggravating circumstance in determining a defendant's sentence. The court held that the trial court may not consider mere arrests which are unsupported by evidence of bad acts or illegal conduct.

Table 50. Other Factors Besides the Risk/Needs Assessment Instrument that Judges Use in Making Decisions

Factor	Number of Times Mentioned
comments on family and family history	11
prior record/history/type of offense	9
juvenile's attitude/demeanor/statements	6
judge's personal experience/gut feeling/intuition	6
need for services/availability	5
psychological and other evaluations	5
the probation officer's report	4
gang involvement	4
drug use	4
age of juvenile	4
county attorney/attorney	3
guardian ad litem	2
victim's statement	2
neighborhood/community sentiment	2
police report	1
JOLTS profile	1
school attendance	1
public safety	1

Is the Risk/Needs Assessment Instrument More Useful for Certain Groups?

In general, the judges did not think the risk/needs instrument was particularly useful for certain groups; two judges said no, five did not know, and seven said it was useful for everyone. When they felt it was more useful, they mentioned older kids, first offenders, kids who had a record (particularly violent), kids they didn't know anything about, and one judge said it wasn't useful for any youths.

Attitudes About the Validity of the Risk/Needs Assessment Instrument

A majority of the judges (63%) thought that the risk/needs assessment instrument results in a valid identification of juvenile offenders who are at risk for re-offending (see Table 51) but only a slight majority (54%) of judges felt it resulted in valid identification of need for services (see

Table 51). A fairly large percent (29%) of judges did not think the instrument resulted in valid identification of what services the juvenile needed.

Table 51. Judges' Attitudes About the Validity of the Risk/Needs Assessment

Statement	Agree		Neutral		Disagree	
	N	%	*N*	%	*N*	%
The risk/needs instrument will result in valid identification of juvenile offenders who are at risk for re-offending.	15	63	7	29	2	8
The risk/needs instrument will result in a valid identification of need for services.	13	54	4	17	7	29

Recommendations for Improvement

The majority of judges did not have any recommendations for improving the instrument. The ones who did make recommendations mentioned the following:

- Add socio-psychological factors,
- Factor in public safety,
- Don't let the probation officers override it,
- Add category about the juvenile's attitude,
- Give judges more orientation because of rotation,
- Get the probation officers to score it,
- Refine the scores, both 50 and 80 denote high risk,
- Determine how valid it is,
- Shred it.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

The current system of assessing risk for subsequent complaint among juveniles referred to the juvenile court system employs separate calculations for juveniles with one offense and who are not adjudicated (the NCCD 1st referral score), and for juveniles who have been adjudicated (the post adjudication score). This study was undertaken to: (1) determine the validity of the current risk assessment process, (2) assess the administration and acceptance of the risk/needs assessment instrument among judicial decision-makers statewide, (3) determine if there is a more parsimonious set of variables that would produce greater predictive efficacy and result in a system of risk assessment that would prove easier to use and understand, (4) purge the instrument of bias, and (5) make recommendations for a revised instrument that examines both risk and needs assessment.

Using all of the variables included on the current Arizona Risk/Needs Assessment Instrument, frequencies were run for all three groups to determine the reliability of each item in terms of the amount of missing data, and relationship to the outcome, i.e., subsequent complaint within 365 days of the current referral. Bivariate relationships were also calculated between the predictors and the outcome variable. Only those considered statistically significant at the .05 level of probability were retained as potential predictors. The reduced set of variables was then entered into a stepwise logistic regression equation to determine a more parsimonious set of predictive items. The resulting items were simultaneously entered into a logistic regression procedure to produce maximum likelihood coefficients that could be used in predicted probability equations to predict risk of subsequent complaint. The variables identified as most predictive were generally consistent with those supported in the literature. Five domains were represented among the most predictive variables for the 1st referral population. In descending order of predictive ability these were: drug use, school problems, family relationship problems, assaultive behavior, and type of offense. Drug use, family problems and school problems were most predictive for all three groups of juveniles, however, the 2nd referral group also had current enrollment in school and mental health or behavior problems; and the 3rd plus referral group had delinquent friends, number of prior complaints, and runaway behavior as best predictors. A survey of probation officers found that the items that were determined to be most predictive in the analysis were also the items they tend to rely on in making their own predictions regarding a juvenile's risk for subsequent offense, thus supporting the face validity of the instrument.

This study compared the predictive efficacy of the current instrument with the predictions of probations officers, and two forms of a modified instrument. One form of the proposed instrument involves calculating the probability of subsequent complaint within 365 days of the current offense, based on the maximum likelihood coefficients obtained from a logistic regression equation of the strongest predictors. The second form of the proposed instrument uses a unit weighting scheme to simplify the scoring procedure. The predicted probability method was found to be the superior method in terms of classifying juveniles based on risk. The

disadvantage of the predicted probability method over the simplified scoring method involves its complex scoring procedure. For instance, it is computationally complex and requires different equations to calculate the probability of re-offense depending on whether the juvenile is 1st referral, 2nd referral, or has 3 or more referrals. Given the sentiments expressed by probation officers, replacing the current system with another complex but more accurate system, could have the impact of subverting the intended reforms. This implies the necessity of training probation officers so that they fully understand the utility of the model. The simplified scoring method would have the advantage of being easy to understand and easy to compute, however, it lacks precision. Either the simplified scoring method or predicted probability method of estimating risk are superior to the current procedures or the judgments of probation officers.

Summary

This study set out to answer five questions.

1. *Validity - does the instrument achieve the goals for which it was designed and with what precision?*

   The current system of risk/needs assessment is not predicting as well as it should. In fact, it is less reliable than the judgment of probation officers. The current risk assessment produced subsequent rates of complaint for juveniles classified as low-risk (26%), medium-risk (34%), and high-risk (50%). Probation officers were able to differentiate between groups of juveniles to produce rates of subsequent complaint of 26% for those rated low, 48% for those rated medium, and 68% for those rated high.

2. *Reliability - is the risk/needs assessment instrument accurately and consistently administered and scored?*

   An assessment of missing data, a survey of probation officers, and the random observation of juveniles files, revealed problems with reliability and consistency of administration. Probation officers often feel that they do not have the information to provide yes or no answers on certain questions. Several variables have data missing for more than 10% of juveniles, and probation officers tend to complete the instrument for those more likely to re-offend. The computerized scoring system does not differentiate between missing data and low scores. The variables used to predict risk for the post adjudication score have not been updated according to subsequent research.

3. *Equity - is the risk/needs assessment instrument biased toward young, minority, and female juveniles?*

   Analysis of bias toward age, race/ethnicity, and gender was carried out comparing the recommended predicted probability method of risk assessment with probation officer judgments. Both subsequent rates of complaint, and correlation analysis provide support for an unbiased assessment using predicted probabilities. In fact, the proposed instrument is better able to assess risk for subsequent complaint for certain subgroups of the population than are probation officers.

4. *Utility - is the system relatively easy to use and understand, and how will it be accepted and used?*

   The current system is reportedly difficult for probation officers to use and understand; as a result many of the probation officers report a dislike of the instrument. However, both judges and probation officers report that they would be more likely to accept and use an instrument that has evidence of validity, and especially if it is easy to use and understand. It is clear, however, that such a system will not be accepted as the primary tool for decision-making, but rather as one tool used in conjunction with other factors such as individual accountability and a consideration for public safety.

5. *Parsimony - can comparable, or enhanced, results be achieved with fewer items and a simpler scoring procedure?*

   This study presented two options for modifying the risk/needs assessment process. The suggested modifications demonstrate superior predictive validity with five items for the first and second referral groups and six for the three or more referral group, and a somewhat complex scoring procedure. If adopted, the required scoring procedure would have to be programmed into the automated information system. Once the needs assessment items and community standard items are determined, the current instrument could be scaled down considerably from its original form.

Recommendations and Suggestions for Further Development

Adopt the revised risk assessment process using the predicted probability method. This method is both more predictive than the current method and produces a more precise indicator of risk. Appendix E is an example of how this version of the risk/needs instrument would look.

Specify what items should be retained for the needs assessment portion of the instrument and revise the format so that they will provide more useful information. Based on the results of the judge and probation officer survey, and suggestions from the literature review on needs assessment, determine what items should be retained for the needs assessment. It is also important to determine in what form these items should be retained (i.e., open-ended versus closed-ended question format). Pilot the new instrument with a group of probation officers and judges, and revise accordingly. This will decrease the data collection burden and should enhance completion rates and accuracy.

Train probation officers in the validity and use of the revised risk/needs instrument. The survey of probation officers revealed that they correctly felt that their own judgment was more reliable than the current empirical assessment. This indicates that the probation officers will require training on the potential for a revised method of risk assessment to provide improved classification of risk. Discussion should occur around how to effectively communicate the results of this study to management, judges, and probation officers. Probation officers also need to be trained on how to complete the instrument in an effort to enhance inter-rater reliability.

The validity of risk/needs assessments can change over time, as can the rate of reliability among those scoring the instrument, therefore validation and an assessment of reliability should be carried out at regular intervals. The Arizona Supreme Court has developed an excellent automated information system. Such a system will allow ongoing validation of any risk/needs assessment instrument at defined intervals, no more than once every two years is recommended. This may be carried out by using the same process described in this report (determine the percent classified and the subsequent rate of complaint within each level of risk). The earliest a new validation study could be completed is two years after implementation of the revised system, this is because one full-year of follow-up data is required. As tables 6, 7, and 8 show, the proposed risk assessment method has been derived from a sample that differs slightly from the population, this is due to missing data.

Monitor the completion and reliability of risk/needs assessment data. Completion of the instrument should be enforced for all juveniles at each and every referral, as is required by statute. Complete and accurate data collection is necessary to assess the validity of the adopted instrument over time. Data collection can be monitored by county, in order to diagnose difficulties and to assist those counties with low compliance rates. The data should also be monitored periodically for accuracy by running frequencies to detect out-of-range values. If monitoring reveals that these problems appear consistently in some counties, or for certain types of cases, these problems can be addressed in a timely manner.

The ultimate goal in risk/needs assessment is to match treatment to risk-level and specified need. This is the next step in the implementation of a risk/needs assessment instrument. Discussion should occur on how to experiment with matching treatment to risk-level and assessed need, on a pilot basis, and a plan should be devised to evaluate the outcome in comparison to like cases who receive standard services.

This study did not examine where in the court process the instrument is the most predictive, because to do so would require data collected separately at separate intervals in the process. Examining the variables that were determined to be most predictive of subsequent complaint, there is no reason to believe that the responses would be different at different points in the process.

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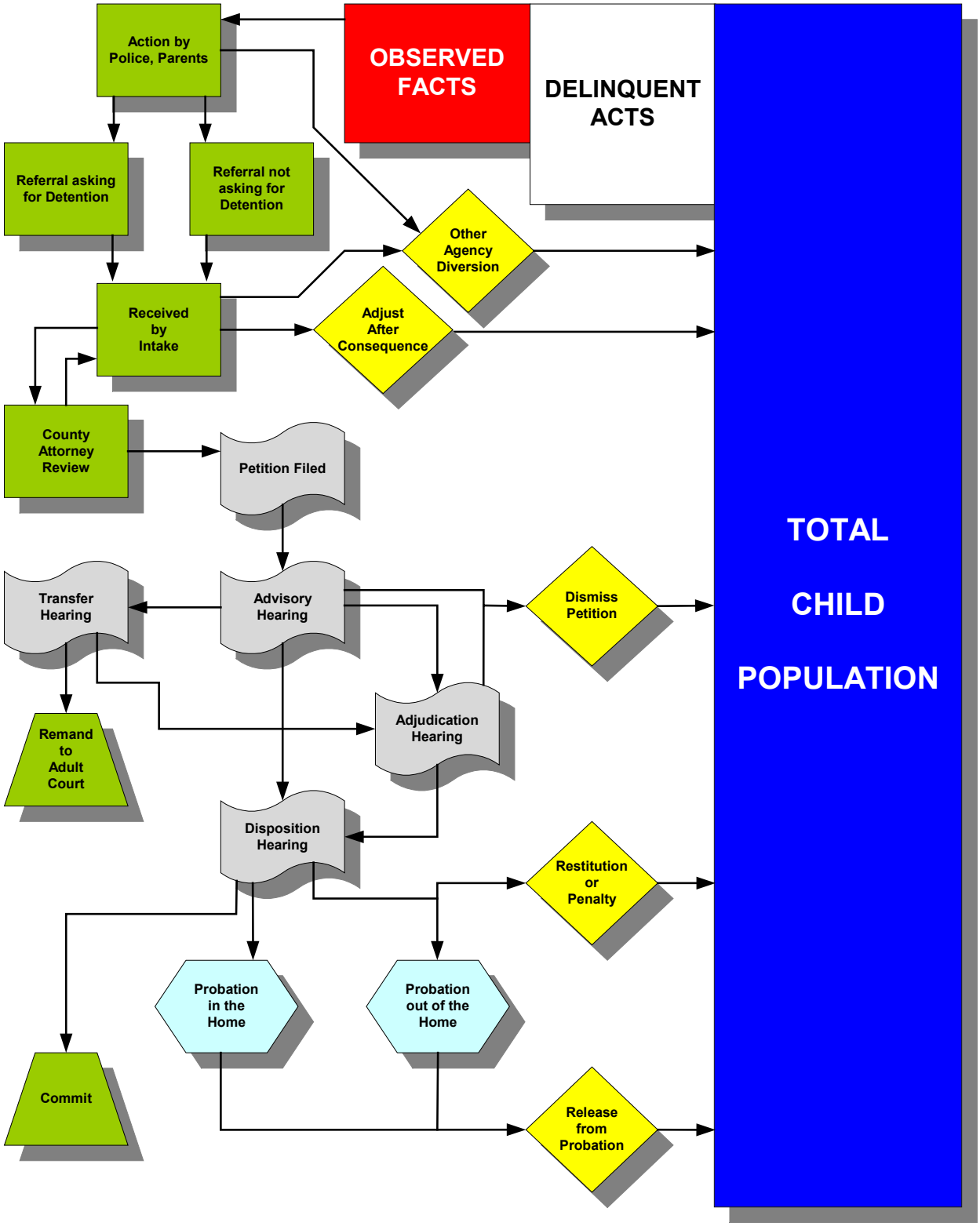
APPENDIX A

FLOW OF JUVENILES THROUGH THE JUSTICE SYSTEM

FLOW OF REFERRALS



APPENDIX B

ASSESSMENT OF MISSING DATA BY COUNTY

Table B-1. Characteristics of the Population with One Referral - Apache County

Variable	Population (*N* = 239)	*Risk Needs* (*N* = 90)	*No Risk Needs* (*N* = 149)
Age at First Referral			
8 - 11.99 years	19.2%	20.0%	18.8%
12 - 15.99 years	49.4%	52.2%	47.7%
16 - 17.00 years	31.4%	27.8%	33.6%
Ethnicity			
Asian/Pacific Islander	0.8%	--	1.3%
Black	1.3%	3.3%	--
Hispanic	18.4%	23.3%	15.4%
Indian	26.8%	3.3%	40.9%
White	52.3%	70.0%	41.6%
Unknown	0.4%	--	0.7%
Gender			
Female	31.4%	36.7%	28.2%
Male	68.6%	36.3%	71.8%
Severity of Most Severe Offense			
Felony Against Person	2.9%	1.1%	4.0%
Felony Against Property	21.8%	22.2%	21.5%
Hindering Justice	2.5%	--	4.0%
Misdemeanor Against Person	5.9%	10.0%	3.4%
Drugs	8.8%	2.2%	12.8%
Disturbing Peace	13.0%	13.3%	12.8%
Misdemeanor against property	14.6%	18.9%	12.1%
Incorrigible, runaway	30.5%	32.2%	29.5%
Citations	--	--	
Juvenile Detained			
Yes	15.1%	11.1%	17.4%
No	84.9%	88.9%	82.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	63.2%	60.7%	64.8%
4:01 p.m. to 10:00 p.m.	25.2%	21.3%	27.6%
10:01 p.m. to 7:59 a.m.	11.5%	18.0%	7.6%
Subsequent Complaint			
Yes	33.5%	50%	76.5%
No	66.5%	50%	23.5%
Average # Days to Subsequent Complaint (Standard Deviation)	121.5 (94.2)	127.8 (90.9)	113.3 (98.9)
Severity of Alleged Subsequent Offense	2.5%	2.2%	2.9%
Felony Against Person	15.0%	15.6%	14.3%
Felony Against Property	6.3%	4.0%	8.6%
Hindering Justice	5.0%	8.9%	--
Misdemeanor Against Person	1.3%	--	2.9%
Drugs	16.3%	6.7%	28.6%
Disturbing Peace	12.5%	13.3%	11.4%
Misdemeanor against property	41.3%	48.9%	31.4%
Incorrigible, runaway	--	--	--
Citations			

Table B-2. Characteristics of the Population with One Referral - Cochise County

Variable	Population (*N* = 792)	*Risk Needs* (*N* = 478)	*No Risk Needs* (*N* = 314)
Age at First Referral			
8 - 11.99 years	12.5%	10.9%	15.0%
12 - 15.99 years	50.0%	50.0%	50.0%
16 - 17.00 years	37.5%	39.1%	35.0%
Ethnicity			
Asian/Pacific Islander	0.6%	0.8%	0.3%
Black	8.0%	607%	9.9%
Hispanic	39.9%	37.4%	43.6%
Indian	0.3%	0.2%	0.3%
White	50.9%	54.6%	45.2%
Other	0.3%	0.2%	0.3%
Unknown	0.1%	--	0.3%
Gender			
Female	41.5%	42.3%	40.4%
Male	58.5%	57.7%	59.6%
Severity of Most Severe Offense			
Felony Against Person	2.7%	2.3%	3.2%
Felony Against Property	102.%	10.9%	9.2%
Hindering Justice	0.5%	0.6%	0.3%
Misdemeanor Against Person	8.7%	9.8%	7.0%
Drugs	5.2%	6.3%	3.5%
Disturbing Peace	17.4%	17.6%	17.2%
Misdemeanor against property	24.0%	24.9%	22.6%
Incorrigible, runaway	30.9%	27.4%	36.3%
Citations	0.4%	0.2%	0.6%
Juvenile Detained			
Yes	6.7%	2.3%	13.4%
No	93.3%	97.7%	86.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.5%	44.4%	49.7%
4:01 p.m. to 10:00 p.m.	31.9%	31.4%	32.7%
10:01 p.m. to 7:59 a.m.	21.6%	24.2%	17.6%
Subsequent Complaint			
Yes	33.7%	35.8%	30.6%
No	66.3%	64.2%	69.4%
Average # Days to Subsequent Complaint (Standard Deviation)	133.6 (102.6)	137.8 (97.8)	126.0 (110.7)
Severity of Alleged Subsequent Offense	0.7%	0.6%	1.0%
Felony Against Person	12.7%	11.7%	14.6%
Felony Against Property	2.2%	3.5%	--
Hindering Justice	10.1%	11.1%	8.3%
Misdemeanor Against Person	8.6%	10.5%	5.2%
Drugs	15.4%	14.6%	16.7%
Disturbing Peace	11.6%	12.9%	9.4%
Misdemeanor against property	38.2%	35.1%	43.8%
Incorrigible, runaway	0.4%	--	1.0%
Citations			

Table B-3. Characteristics of the Population with One Referral - Coconino County

Variable	Population (*N* = 915)	*Risk Needs* (*N* = 552)	*No Risk Needs* (*N* = 363)
Age at First Referral			
8 - 11.99 years	12.6%	10.7%	15.4%
12 - 15.99 years	49.0%	54.2%	41.0%
16 - 17.00 years	38.5%	43.5%	35.1%
Ethnicity			
Asian/Pacific Islander	0.3%	0.4%	0.3%
Black	2.7%	1.3%	5.0%
Hispanic	8.5%	9.6%	6.9%
Indian	33.2%	33.3%	33.1%
White	55.0%	55.3%	54.5%
Unknown	0.2%	0.2%	0.3%
Gender			
Female	39.9%	40.9%	38.3%
Male	60.1%	59.1%	61.7%
Severity of Most Severe Offense			
Felony Against Person	2.0%	2.4%	1.4%
Felony Against Property	12.5%	12.0%	13.2%
Hindering Justice	0.2%	--	0.6%
Misdemeanor Against Person	7.5%	5.3%	11.0%
Drugs	9.2%	10.9%	6.6%
Disturbing Peace	14.6%	14.5%	14.9%
Misdemeanor against property	31.7%	27.9%	37.5%
Incorrigible, runaway	22.3%	27.2%	14.9%
Citations	--	--	--
Juvenile Detained			
Yes	21.4%	19.2%	25.6%
No	78.3%	80.8%	74.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	49.8%	52.5%	45.9%
4:01 p.m. to 10:00 p.m.	34.6%	32.2%	38.1%
10:01 p.m. to 7:59 a.m.	15.6%	15.3%	16.0%
Subsequent Complaint			
Yes	26.7%	34.1%	15.4%
No	73.3%	65.9%	84.6%
Average # Days to Subsequent Complaint (Standard Deviation)	134.0 (105.3)	134.6 (105.3)	132.2 (106.0)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.0%	2.1%	1.8%
Felony Against Property	13.9%	14.9%	10.4%
Hindering Justice	1.2%	1.6%	--
Misdemeanor Against Person	7.8%	6.4%	12.5%
Drugs	9.4%	8.5%	12.5%
Disturbing Peace	17.6%	19.1%	12.5%
Misdemeanor against property	24.2%	23.9%	25.0%
Incorrigible, runaway	23.8%	23.4%	25.0%
Citations	--	--	--

Table B-4. Characteristics of the Population with One Referral - Gila County

Variable	Population (*N* = 396)	*Risk Needs* (*N* = 188)	*No Risk Needs* (*N* = 208)
Age at First Referral			
8 - 11.99 years	16.2%	12.2%	19.7%
12 - 15.99 years	44.7%	51.1%	38.9%
16 - 17.00 years	39.1%	36.7%	41.3%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	1.5%	0.5%	2.4%
Hispanic	17.9%	17.0%	18.8%
Indian	13.6%	9.6%	17.3%
White	66.4%	71.8%	61.5%
Other	0.3%	0.5%	--
Unknown	0.3%	0.5%	--
Gender			
Female	36.4%	38.8%	34.1%
Male	63.6%	61.2%	65.9%
Severity of Most Severe Offense			
Felony Against Person	1.5%	–	2.9%
Felony Against Property	10.1%	11.7%	8.7%
Hindering Justice	1.0%	0.5%	1.4%
Misdemeanor Against Person	5.1%	5.9%	4.3%
Drugs	5.3%	2.1%	8.2%
Disturbing Peace	22.5%	18.6%	26.0%
Misdemeanor against property	26.0%	27.1%	25.0%
Incorrigible, runaway	28.0%	34.0%	22.6%
Citations	0.5%	--	1.0%
Juvenile Detained			
Yes	11.4%	6.9%	15.4%
No	88.6%	93.1%	84.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	51.8%	54.2%	49.8%
4:01 p.m. to 10:00 p.m.	31.1%	30.7%	31.4%
10:01 p.m. to 7:59 a.m.	17.1%	15.1%	18.8%
Subsequent Complaint			
Yes	30.3%	40.4%	21.2%
No	69.7%	59.6%	78.8%
Average # Days to Subsequent Complaint (Standard Deviation)	128.7 (104.2)	138.3 (108.8)	112.2 (94.7)
Severity of Alleged Subsequent Offense	2.5%	3.9%	--
Felony Against Person	11.7%	13.2%	9.1%
Felony Against Property	2.5%	2.6%	2.3%
Hindering Justice	10.0%	9.2%	11.4%
Misdemeanor Against Person	8.3%	9.2%	6.8%
Drugs	19.2%	19.7%	18.2%
Disturbing Peace	12.5%	10.5%	15.9%
Misdemeanor against property	33.3%	31.6%	36.4%
Incorrigible, runaway	--	--	--
Citations			

Table B-5. Characteristics of the Population with One Referral - Graham County

Variable	Population (N = 199)	Risk Needs (N = 109)	No Risk Needs (N = 90)
Age at First Referral			
8 - 11.99 years	11.1%	14.7%	6.7%
12 - 15.99 years	56.3%	58.7%	53.3%
16 - 17.00 years	32.7%	26.6%	40.0%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	7.0%	6.4%	7.8%
Indian	3.5%	2.8%	4.4%
White	89.4%	90.8%	87.8%
Gender			
Female	33.7%	31.2%	36.7%
Male	66.3%	68.8%	63.3%
Severity of Most Severe Offense			
Felony Against Person	1.5%	--	3.3%
Felony Against Property	12.6%	12.8%	12.2%
Hindering Justice	--	--	--
Misdemeanor Against Person	3.0%	0.9%	5.6%
Drugs	5.5%	4.6%	6.7%
Disturbing Peace	19.1%	14.7%	24.4%
Misdemeanor against property	33.7%	42.2%	23.3%
Incorrigible, runaway	24.6%	24.8%	24.4%
Citations	--	--	--
Juvenile Detained			
Yes	5.0%	2.8%	7.8%
No	95.0%	97.2%	92.2%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	43.2%	42.2%	44.4%
4:01 p.m. to 10:00 p.m.	34.2%	33.0%	35.6%
10:01 p.m. to 7:59 a.m.	22.6%	24.8%	20.0%
Subsequent Complaint			
Yes	35.2%	29.4%	42.2%
No	64.8%	70.6%	57.8%
Average # Days to Subsequent Complaint (Standard Deviation)	158.5 (117.3)	151.1 (99.7)	164.8 (131.4)
Severity of Alleged Subsequent Offense			
	5.7%	9.4%	2.6%
Felony Against Person	20.0%	21.9%	18.4%
Felony Against Property	4.3%	6.3%	2.6%
Hindering Justice	--	--	--
Misdemeanor Against Person	8.6%	--	15.8%
Drugs	8.6%	6.3%	10.5%
Disturbing Peace	15.7%	21.9%	10.5%
Misdemeanor against property	37.1%	34.4%	39.5%
Incorrigible, runaway	--	--	--
Citations			

Table B-6. Characteristics of the Population with One Referral - Greenlee County

Variable	Population (N = 73)	Risk Needs (N = 44)	No Risk Needs (N = 29)
Age at First Referral			
8 - 11.99 years	11.0%	13.6%	6.9%
12 - 15.99 years	47.9%	45.5%	51.7%
16 - 17.00 years	41.1%	40.9%	41.4%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	43.8%	40.9%	48.3%
Indian	4.1%	--	10.3%
White	52.1%	59.1%	41.4%
Gender			
Female	37.0%	31.8%	44.8%
Male	63.0%	68.2%	55.2%
Severity of Most Severe Offense			
Felony Against Person	2.7%	4.5%	--
Felony Against Property	15.1%	15.9%	13.8%
Hindering Justice	1.4%	--	3.4%
Misdemeanor Against Person	8.2%	11.4%	3.4%
Drugs	--	--	--
Disturbing Peace	15.1%	15.9%	13.8%
Misdemeanor against property	16.4%	18.2%	13.8%
Incorrigible, runaway	41.1%	34.1%	51.7%
Citations	--	--	--
Juvenile Detained			
Yes	6.8%	–	11.4%
No	93.2%	100%	88.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	35.9%	40.0%	29.2%
4:01 p.m. to 10:00 p.m.	40.6%	42.5%	37.5%
10:01 p.m. to 7:59 a.m.	23.4%	17.5%	33.3%
Subsequent Complaint			
Yes	35.6%	38.6%	31.0%
No	64.4%	61.4%	69.0%
Average # Days to Subsequent Complaint (Standard Deviation)	133.9 (113.4)	122.0 (100.9)	156.3 (137.7)
Severity of Alleged Subsequent Offense	--	--	--
Felony Against Person	3.8%	5.9%	--
Felony Against Property	7.7%	11.8%	--
Hindering Justice	15.4%	11.8%	22.2%
Misdemeanor Against Person	3.8%	5.9%	--
Drugs	15.4%	11.8%	22.2%
Disturbing Peace	11.5%	11.8%	11.1%
Misdemeanor against property	42.3%	41.2%	44.4%
Incorrigible, runaway	--	--	–
Citations			

Table B-7. Characteristics of the Population with One Referral - LaPaz County

Variable	Population (N = 91)	Risk Needs (N = 129)	No Risk Needs (N = 62)
Age at First Referral			
8 - 11.99 years	7.7%	13.8%	4.8%
12 - 15.99 years	46.2%	48.3%	45.2%
16 - 17.00 years	46.2%	37.9%	50.0%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	2.2%	--	3.2%
Hispanic	27.5%	24.1%	29.0%
Indian	2.2%	--	3.2%
White	68.1%	75.9%	64.5%
Gender			
Female	20.9%	24.1%	19.4%
Male	79.1%	75.9%	80.6%
Severity of Most Severe Offense			
Felony Against Person	--	--	--
Felony Against Property	25.3%	20.7%	27.4%
Hindering Justice	--	--	--
Misdemeanor Against Person	13.2%	20.7%	9.7%
Drugs	11.0%	3.4%	14.5%
Disturbing Peace	15.4%	24.1%	11.3%
Misdemeanor against property	8.8%	13.8%	6.5%
Incorrigible, runaway	26.4%	17.2%	30.6%
Citations	--	--	--
Juvenile Detained			
Yes	18.7%	103.%	22.6%
No	81.3%	89.7%	77.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	37.4%	34.5%	38.7%
4:01 p.m. to 10:00 p.m.	30.8%	31.0%	30.6%
10:01 p.m. to 7:59 a.m.	31.9%	34.5%	30.6%
Subsequent Complaint			
Yes	25.3%	34.5%	21.0%
No	74.7%	65.5%	74.7%
Average # Days to Subsequent Complaint (Standard Deviation)	83.3 (90.0)	90.1 (96.1)	78.1 (88.60)
Severity of Alleged Subsequent Offense			
	4.3%	--	7.7%
Felony Against Person	21.7%	20.0%	23.1%
Felony Against Property	43.%	10.0%	--
Hindering Justice	8.7%	20.0%	--
Misdemeanor Against Person	13.0%	20.0%	7.7%
Drugs	21.7%	10.0%	30.8%
Disturbing Peace	--	--	--
Misdemeanor against property	26.1%	20.0%	30.8%
Incorrigible, runaway	--	--	--
Citations			

Table B-8. Characteristics of the Population with One Referral - Maricopa County

Variable	Population (*N* = 9,085)	*Risk Needs* (*N* = 4,952)	*No Risk Needs* (*N* = 4,133)
Age at First Referral			
8 - 11.99 years	9.2%	9.8%	8.5%
12 - 15.99 years	51.1%	53.0%	48.8%
16 - 17.00 years	39.7%	37.1%	42.7%
Ethnicity			
Asian/Pacific Islander	.04%	0.4%	0.5%
Black	7.7%	8.9%	6.3%
Hispanic	29.5%	30.4%	28.4%
Indian	2.5%	2.3%	2.9%
White	59.3%	57.5%	61.5%
Othe	0.5%	0.5%	0.4%
Gender			
Female	36.4%	32.3%	41.4%
Male	63.6%	67.7%	58.6%
Severity of Most Severe Offense			
Felony Against Person	4.7%	6.1%	3.0%
Felony Against Property	11.8%	17.0%	5.0%
Hindering Justice	0.3%	0.5%	0.2%
Misdemeanor Against Person	7.4%	10.8%	3.4%
Drugs	6.7%	10.7%	1.9%
Disturbing Peace	9.1%	9.4%	8.7%
Misdemeanor against property	30.6%	28.2%	33.6%
Incorrigible, runaway	29.0%	17.1%	43.3%
Citations	0.3%	0.2%	0.5%
Juvenile Detained			
Yes	4.7%	5.9%	3.3%
No	95.3%	94.1%	96.7%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	43.1%	46.4%	38.0%
4:01 p.m. to 10:00 p.m.	35.1%	35.0%	35.2%
10:01 p.m. to 7:50 a.m.	21.8%	18.5%	26.7%
Subsequent Complaint			
Yes	33.8%	41.3%	24.8%
No	66.2%	58.7%	75.2%
Average # Days to Subsequent Complaint (Standard Deviation)	138.5 (107.1)	133.2 (105.2)	149.2 (110.2)
Severity of Alleged Subsequent Offense	4.3%	4.4%	3.9%
Felony Against Person	11.6%	12.6%	9.8%
Felony Against Property	4.6%	5.6%	2.6%
Hindering Justice	8.0%	9.0%	6.0%
Misdemeanor Against Person	7.6%	8.2%	6.3%
Drugs	8.4%	8.9%	7.4%
Disturbing Peace	17.2%	16.9%	17.8%
Misdemeanor against property	38.0%	34.1%	45.9%
Incorrigible, runaway	0.3%	0.2%	0.3%
Citations			

Table B-9. Characteristics of the Population with One Referral - Mohave County

Variable	Population (N = 845)	Risk Needs (N = 480)	No Risk Needs (N = 365)
Age at First Referral			
8 - 11.99 years	15.5%	15.6%	15.3%
12 - 15.99 years	49.0%	55.0%	41.1%
16 - 17.00 years	35.5%	29.4%	43.6%
Ethnicity			
Asian/Pacific Islander	0.1%	0.2%	--
Black	1.7%	1.3%	2.2%
Hispanic	10.7%	10.4%	11.0%
Indian	1.7%	1.5%	1.9%
White	85.5%	86.7%	84.7%
Unknown	0.1%	–	0.3%
Gender			
Female	35.7%	30.8%	42.2%
Male	64.3%	69.2%	57.8%
Severity of Most Severe Offense			
Felony Against Person	3.7%	4.2%	3.0%
Felony Against Property	15.7%	18.8%	11.8%
Hindering Justice	0.2%	0.4%	--
Misdemeanor Against Person	7.6%	8.3%	6.6%
Drugs	6.7%	8.5%	4.4%
Disturbing Peace	18.3%	21.5%	14.2%
Misdemeanor against property	24.4%	31.7%	14.8%
Incorrigible, runaway	23.2%	6.7%	44.9%
Citations	0.1%	--	0.3%
Juvenile Detained			
Yes	3.6%	1.7%	6.0%
No	96.4%	98.3%	94.0%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	50.7%	48.0%	54.1%
4:01 p.m. to 10:00 p.m.	29.5%	34.7%	22.7%
10:01 p.m. to 7:59 a.m.	19.9%	17.3%	23.2%
Subsequent Complaint			
Yes	27.7%	30.0%	24.7%
No	72.3%	70.0%	75.3%
Average # Days to Subsequent Complaint (Standard Deviation)	125.3 (95.9)	134.1 (97.2)	111.2 (92.7)
Severity of Alleged Subsequent Offense	3.8%	4.2%	3.3%
Felony Against Person	15.0%	18.1%	10.0%
Felony Against Property	2.6%	4.2%	--
Hindering Justice	7.7%	8.3%	6.7%
Misdemeanor Against Person	6.8%	5.6%	8.9%
Drugs	19.7%	20.8%	17.8%
Disturbing Peace	17.1%	18.8%	14.4%
Misdemeanor against property	27.4%	20.1%	38.9%
Incorrigible, runaway	--	--	--
Citations			

Table B-10. Characteristics of the Population with One Referral - Navajo County

Variable	Population (N = 578)	Risk Needs (N = 157)	No Risk Needs (N =421)
Age at First Referral			
8 - 11.99 years	13.1%	12.7%	13.3%
12 - 15.99 years	43.9%	49.0%	42.0%
16 - 18.00 year	42.9%	38.2%	44.7%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	2.1%	--	2.9%
Hispanic	8.5%	7.0%	9.0%
Indian	36.9%	36.9%	36.9%
White	52.3%	56.1%	51.0%
Other	0.2%	--	0.2%
Gender			
Female	38.1%	38.2%	38.0%
Male	61.9%	61.8%	62.0%
Severity of Most Severe Offense			
Felony Against Person	3.1%	3.8%	2.9%
Felony Against Property	11.4%	10.8%	11.6%
Hindering Justice	0.7%	0.6%	0.7%
Misdemeanor Against Person	7.4%	11.5%	5.9%
Drugs	2.8%	0.6%	3.6%
Disturbing Peace	17.0%	16.6%	17.1%
Misdemeanor against property	33.4%	34.4%	33.0%
Incorrigible, runaway	23.7%	21.7%	24.5%
Citations	0.5%	--	0.7
Juvenile Detained			
Yes	13.0%	10.8%	13.8%
No	87.0%	89.2%	86.2%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	51.8%	63.4%	47.4%
4:01 p.m. to 10:00 p.m.	33.8%	24.8%	37.2%
10:01 p.m. to 7:59 a.m.	14.4%	11.8%	15.5%
Subsequent Complaint			
Yes	26.5%	26.1%	26.6%
No	73.5%	73.9%	73.4%
Average # Days to Subsequent Complaint (Standard Deviation)	123.9 (94.2)	123.8 (93.8)	123.9 (94.8)
Severity of Alleged Subsequent Offense	2.6%	2.4%	2.7%
Felony Against Person	8.5%	9.8%	8.0%
Felony Against Property	2.0%	--	2.7%
Hindering Justice	7.2%	4.9%	8.0%
Misdemeanor Against Person	7.2%	7.3%	7.1%
Drugs	20.9%	22.0%	20.5%
Disturbing Peace	11.8%	7.3%	13.4%
Misdemeanor against property	39.2%	46.3%	36.6%
Incorrigible, runaway	0.7%	--	0.9
Citations			

Table B-11. Characteristics of the Population with One Referral - Pima County

Variable	Population (N = 4,261)	Risk Needs (N = 3,246)	No Risk Needs (N = 1,015)
Age at First Referral			
8 - 11.99 years	13.4%	13.9%	11.9%
12 - 15.99 years	50.4%	51.5%	46.8%
16 - 17.00 years	36.2%	34.6%	41.3%
Ethnicity			
Asian/Pacific Islander	0.8%	0.9%	0.4%
Black	6.6%	6.4%	7.4%
Hispanic	43.2%	42.6%	45.1%
Indian	4.0%	3.8%	4.7%
White	44.9%	45.8%	41.7%
Other	0.4%	0.4%	0.4%
Unknown	0.2%	0.2%	0.3%
Gender			
Female	40.7%	41.7%	37.6%
Male	59.3%	58.3%	62.4%
Severity of Most Severe Offense			
Felony Against Person	2.7%	3.2%	1.1%
Felony Against Property	6.5%	6.9%	5.0%
Hindering Justice	0.8%	0.8%	0.6%
Misdemeanor Against Person	12.5%	13.5%	9.6%
Drugs	10.4%	11.6%	6.5%
Disturbing Peace	20.3%	19.5%	22.9%
Misdemeanor against property	21.6%	22.3%	19.4%
Incorrigible, runaway	25.3%	22.2%	35.0%
Citations	--	--	--
Juvenile Detained			
Yes	15.0%	19.0%	2.2%
No	85.0%	81.0%	97.8
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.3%	50.4%	37.2%
4:01 p.m. to 10:00 p.m.	30.1%	32.8%	21.4%
10:01 p.m. to 7:59 a.m.	22.7%	16.8%	41.4%
Subsequent Complaint			
Yes	35.7%	37.1%	31.3%
No	64.3%	62.9%	68.7%
Average # Days to Subsequent Complaint (Standard Deviation)	130.4 (105.5)	128.1 (105.4)	139.2 (105.6)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.1%	2.8%	4.1%
Felony Against Property	8.0%	7.4%	10.4%
Hindering Justice	1.2%	1.3%	0.6%
Misdemeanor Against Person	12.7%	13.0%	11.6%
Drugs	11.6%	11.4%	12.3%
Disturbing Peace	11.6%	16.3%	21.4%
Misdemeanor against property	17.3%	12.9%	14.8%
Incorrigible, runaway	13.3%	35.0%	24.8%
Citations	32.9%	--	-

Table B-12. Characteristics of the Population with One Referral - Pinal County

Variable	Population (N = 858)	Risk Needs (N = 442)	No Risk Needs (N = 416)
Age at First Referral			
8 - 11.99 years	10.1%	12.0%	8.2%
12 - 15.99 years	54.0%	56.1%	51.7%
16 - 17.00 years	35.9%	39.1%	40.1%
Ethnicity			
Asian/Pacific Islander	0.1%	--	0.2%
Black	6.2%	4.1%	8.4%
Hispanic	38.7%	38.5%	38.9%
Indian	10.1%	10.6%	9.6%
White	44.8%	46.6%	42.8%
Other	0.1%	0.2%	--
Gender			
Female	33.1%	35.5%	30.5%
Male	66.9%	64.5%	69.5%
Severity of Most Severe Offense			
Felony Against Person	2.9%	3.4%	2.4%
Felony Against Property	14.1%	16.3%	11.8%
Hindering Justice	0.2%	0.5%	--
Misdemeanor Against Person	11.8%	10.0%	13.7%
Drugs	7.0%	10.0%	3.8%
Disturbing Peace	21.8%	20.4%	23.3%
Misdemeanor against property	23.9%	24.7%	23.1%
Incorrigible, runaway	17.7%	14.9%	20.7%
Citations	0.6%	--	1.2%
Juvenile Detained			
Yes	8.9%	8.1%	9.6%
No	91.1%	91.9%	90.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.0%	49.0%	44.9%
4:01 p.m. to 10:00 p.m.	35.1%	36.1%	34.1%
10:01 p.m. to 7:59 a.m.	17.9%	15.0%	21.0%
Subsequent Complaint			
Yes	33.9%	36.9%	30.8%
No	66.1%	63.1%	69.2%
Average # Days to Subsequent Complaint (Standard Deviation)	127.7 (107.4)	125.7 (106.5)	130.2 (108.9)
Severity of Alleged Subsequent Offense			
	3.1%	3.7%	2.3%
Felony Against Person	14.1%	11.7%	17.2%
Felony Against Property	5.2%	8.6%	0.8%
Hindering Justice	13.1%	14.7%	10.9%
Misdemeanor Against Person	7.6%	7.4%	7.8%
Drugs	15.5^	15.3%	15.6%
Disturbing Peace	17.5%	12.9%	23.4%
Misdemeanor against property	22.7%	24.5%	20.3%
Incorrigible, runaway	1.4%	1.2%	1.6%
Citations			

Table B-13. Characteristics of the Population with One Referral - Santa Cruz County

Variable	Population (N = 185)	Risk Needs (N = 78)	No Risk Needs (N = 107)
Age at First Referral			
8 - 11.99 years	14.1%	11.5%	15.9%
12 - 15.99 years	50.8%	46.2%	54.2%
16 - 17.00 years	35.1%	42.3%	29.9%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	94.6%	93.6%	95.3%
Indian	--	--	--
White	5.4%	6.4%	4.7%
Gender			
Female	28.6%	25.6%	30.8%
Male	71.4%	74.4%	69.2%
Severity of Most Severe Offense			
Felony Against Person	5.9%	5.1%	6.5%
Felony Against Property	31.9%	37.2%	28.0%
Hindering Justice	1.1%	1.3%	0.9%
Misdemeanor Against Person	11.9%	9.0%	14.0%
Drugs	9.2%	11.5%	7.5%
Disturbing Peace	9.2%	9.0%	9.3%
Misdemeanor against property	15.7%	11.5%	18.7%
Incorrigible, runaway	15.1%	15.4%	15.0%
Citations	--	--	--
Juvenile Detained			
Yes	22.7%	28.2%	18.7%
No	77.3%	71.8%	81.3%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.0%	44.9%	48.6%
4:01 p.m. to 10:00 p.m.	37.3%	38.5%	36.4%
10:01 p.m. to 7:59 a.m.	15.7%	16.7%	15.0%
Subsequent Complaint			
Yes	36.8%	42.3%	32.7%
No	63.2%	57.7%	67.3%
Average # Days to Subsequent Complaint (Standard Deviation)	140.3 (106.7)	152.5 (108.0)	128.7 (105.6)
Severity of Alleged Subsequent Offense			
	2.9%	--	5.7%
Felony Against Person	25.0%	24.2%	25.7%
Felony Against Property	5.9%	12.1%	--
Hindering Justice	13.2%	18.2%	8.6%
Misdemeanor Against Person	11.8%	12.1%	11.4%
Drugs	11.8%	15.2%	8.6%
Disturbing Peace	11.8%	15.2%	8.6%
Misdemeanor against property	16.2%	3.0%	28.6%
Incorrigible, runaway	1.5%	--	2.9%
Citations			

Table B-14. Characteristics of the Population with One Referral - Yavapai County

Variable	Population (N = 822)	Risk Needs (N = 492)	No Risk Needs (N = 330)
Age at First Referral			
8 - 11.99 years	14.4%	14.4%	14.2%
12 - 15.99 years	47.6%	50.0%	43.9%
16 - 17.00 years	38.1%	35.6%	41.8%
Ethnicity			
Asian/Pacific Islander	0.1%	--	0.3%
Black	1.5%	1.0%	2.1%
Hispanic	9.4%	8.7%	10.3%
Indian	2.4%	2.2%	2.7%
White	86.4%	87.8%	84.2%
Other	0.2%	0.3%	0.2%
Gender			
Female	33.9%	32.9%	35.5%
Male	66.1%	67.1%	64.5%
Severity of Most Severe Offense			
Felony Against Person	3.0%	3.3%	2.7%
Felony Against Property	22.1%	24.0%	19.4%
Hindering Justice	0.6%	0.8%	0.3%
Misdemeanor Against Person	8.8%	6.9%	11.5%
Drugs	7.5%	8.5%	6.1%
Disturbing Peace	17.4%	16.1%	19.4%
Misdemeanor against property	20.1%	24.6%	13.3%
Incorrigible, runaway	20.3%	15.9%	27.0%
Citations	0.1%	--	0.3%
Juvenile Detained			
Yes	18.0%	14.0%	23.9%
No	82.0%	86.0%	76.1%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.6%	47.4%	47..9%
4:01 p.m. to 10:00 p.m.	31.3%	32.7%	29.3%
10:01 p.m. to 7:59 a.m.	21.1%	19.9%	22.9%
Subsequent Complaint			
Yes	31.0%	35.0%	25.2%
No	69.0%	65.0%	74.8%
Average # Days to Subsequent Complaint (Standard Deviation)	133.8 (103.3)	136.8 (100.4)	127.8 (109.4)
Severity of Alleged Subsequent Offense	3.5%	3.5%	3.6%
Felony Against Person	25.5%	23.8%	28.9%
Felony Against Property	2.7%	2.9%	2.4%
Hindering Justice	7.8%	8.1%	7.2%
Misdemeanor Against Person	9.0%	7.0%	13.3%
Drugs	15.7%	18.6%	9.6%
Disturbing Peace	15.7%	15.7%	15.7%
Misdemeanor against property	20.0%	20.3%	19.3%
Incorrigible, runaway	--	--	--
Citations			

Table B-15. Characteristics of the Population with One Referral - Yuma County

Variable	Population (N = 760)	Risk Needs (N = 418)	No Risk Needs (N = 342)
Age at First Referral			
8 - 11.99 years	14.2%	14.4%	14.0%
12 - 15.99 years	51.3%	52.9%	49.4%
16 - 17.00 years	34.5%	32.8%	36.5%
Ethnicity			
Asian/Pacific Islander	0.5%	0.2%	0.9%
Black	2.9%	3.6%	2.0%
Hispanic	61.7%	60.5%	63.2%
Indian	2.1%	2.6%	1.5%
White	32.6%	33.0%	32.2%
Other	0.1%	--	0.3%
Gender			
Female	33.9%	28.2%	40.9%
Male	66.1%	71.8%	59.1%
Severity of Most Severe Offense			
Felony Against Person	5.0%	5.5%	4.4%
Felony Against Property	10.3%	12.4%	7.6%
Hindering Justice	0.9%	1.0%	0.9%
Misdemeanor Against Person	8.4%	9.1%	7.6%
Drugs	10.5%	14.4%	5.8%
Disturbing Peace	14.3%	17.2%	10.8%
Misdemeanor against property	19.9%	25.6%	12.9%
Incorrigible, runaway	30.5%	14.8%	49.7%
Citations	0.1%	--	0.3%
Juvenile Detained			
Yes	10.5%	8.6%	12.9%
No	89.5%	91.4%	87.1%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.4%	53.9%	37.2%
4:01 p.m. to 10:00 p.m.	28.5%	30.2%	26.5%
10:01 p.m. to 7:59 a.m.	25.1%	15.9%	36.3%
Subsequent Complaint			
Yes	35.8%	40.7%	29.8%
No	64.2%	59.3%	70.2%
Average # Days to Subsequent Complaint (Standard Deviation)	141.9 (100.7)	141.7 (93.5)	142.3 (112.0)
Severity of Alleged Subsequent Offense	2.6%	2.4%	2.9%
Felony Against Person	6.6%	6.5%	6.9%
Felony Against Property	18.0%	28.2%	--
Hindering Justice	8.1%	5.3%	12.7%
Misdemeanor Against Person	9.6%	11.2%	6.9%
Drugs	12.1%	9.4%	16.7%
Disturbing Peace	9.6%	10.6%	7.8%
Misdemeanor against property	33.5%	25.9%	46.1%
Incorrigible, runaway	--	--	–
Citations			

Table B-16. Characteristics of the Population with Two Referrals - Apache County

Variable	Population (N = 117)	Risk Needs (N = 35)	No Risk Needs (N = 82)
Age at First Referral			
8 - 11.99 years	22.2%	20.0%	23.2%
12 - 15.99 years	53.8%	57.1%	52.4%
16 - 17.00 years	23.9%	22.9%	24.4%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	2.6%	2.9%	2.4%
Hispanic	23.1%	25.7%	22.0%
Indian	19.7%	5.7%	25.6%
White	54.7%	65.7%	50.0%
Gender			
Female	37.6%	40.0%	36.6%
Male	62.4%	60.0%	63.4%
Severity of Most Severe Current Offense			
Felony Against Person	1.7%	--	2.4%
Felony Against Property	14.5%	17.1%	13.4%
Hindering Justice	6.8%	8.6%	6.1%
Misdemeanor Against Person	6.0%	11.4%	3.7%
Drugs	2.6%	2.9%	2.4%
Disturbing Peace	15.4%	14.3%	15.9%
Misdemeanor against property	9.4%	8.6%	9.8%
Incorrigible, runaway	43.6%	37.1%	46.3%
Citations	--	--	--
Juvenile Detained			
Yes	18.8%	20.0%	18.3%
No	81.2%	80.0%	81.7%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	57.1%	52.9%	59.0%
4:01 p.m. to 10:00 p.m.	10.7%	–	15.4%
10:01 p.m. to 7:59 a.m.	32.1%	47.1%	25.6%
Subsequent Complaint			
Yes	61.5%	80.0%	53.7%
No	38.5%	20.0%	46.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	80.9 (95.0)	69.4 (79.7)	88.1 (103.8)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.2%	7.1%	2.3%
Felony Against Property	23.6%	28.6%	20.5%
Hindering Justice	12.5%	10.7%	13.6%
Misdemeanor Against Person	8.3%	3.6%	11.4%
Drugs	2.8%	3.6%	2.3%
Disturbing Peace	12.5%	17.9%	9.1%
Misdemeanor against property	5.6%	--	9.1%
Incorrigible, runaway	30.6%	28.6%	31.8%
Citations	--	--	--

Table B-17. Characteristics of the Population with Two Referrals - Cochise County

Variable	Population (N = 378)	Risk Needs (N = 216)	No Risk Needs (N = 162)
Age at First Referral			
8 - 11.99 years	14.8%	14.8%	14.8%
12 - 15.99 years	62.4%	64.4%	59.9%
16 - 17.00 years	22.8%	20.8%	25.3%
Ethnicity			
Asian/Pacific Islander	0.3%	0.5%	--
Black	9.8%	6.5%	14.2%
Hispanic	38.9%	37.5%	40.7%
Indian	0.3%	--	0.6%
White	50.8%	55.6%	44.4%
Gender			
Female	37.0%	40.3%	32.7%
Male	63.0%	59.7%	67.3%
Severity of Most Severe Current Offense			
Felony Against Person	1.6%	0.9%	2.5%
Felony Against Property	13.0%	11.6%	14.8%
Hindering Justice	3.2%	3.2%	3.1%
Misdemeanor Against Person	10.8%	13.4%	7.4%
Drugs	7.4%	9.7%	4.3%
Disturbing Peace	14.3%	13.9%	14.8%
Misdemeanor against property	12.4%	12.0%	13.0%
Incorrigible, runaway	37.3%	35.2%	40.1%
Citations	--	--	--
Juvenile Detained			
Yes	11.4%	8.3%	15.4%
No	88.6%	91.7%	84.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	43.6%	42.9%	44.4%
4:01 p.m. to 10:00 p.m.	31.5%	31.1%	32.0%
10:01 p.m. to 7:59 a.m.	24.9%	25.9%	23.5%
Subsequent Complaint			
Yes	56.3%	56.0%	56.8%
No	43.7%	44.0%	43.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	108.5 (97.5)	120.5 (104.9)	92.7 (85.0)
Severity of Alleged Subsequent Offense			
Felony Against Person	1.9%	2.5%	1.1%
Felony Against Property	14.6%	14.0%	15.2%
Hindering Justice	4.7%	4.1%	5.4%
Misdemeanor Against Person	8.5%	10.7%	5.4%
Drugs	8.0%	9.1%	6.5%
Disturbing Peace	17.8%	16.5%	19.6%
Misdemeanor against property	14.8%	14.9%	14.1%
Incorrigible, runaway	29.6%	28.1%	31.5%
Citations	0.5%	--	1.1

Table B-18. Characteristics of the Population with Two Referrals - Coconino County

Variable	Population (N = 408)	Risk Needs (N = 277)	No Risk Needs (N =131)
Age at First Referral			
8 - 11.99 years	19.9%	18.1%	23.7%
12 - 15.99 years	56.9%	62.8%	44.3%
16 - 17.00 years	23.3%	19.1%	32.1%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	3.7%	2.5%	6.1%
Hispanic	12.3%	12.6%	11.5%
Indian	27.7%	28.5%	26.0%
White	56.4%	56.3%	56.5%
Gender			
Female	33.8%	30.7%	40.5%
Male	66.2%	69.3%	59.5%
Severity of Most Severe Current Offense			
Felony Against Person	4.2%	4.7%	3.1%
Felony Against Property	16.2%	17.0%	14.5%
Hindering Justice	0.2%	--	0.8%
Misdemeanor Against Person	6.9%	6.1%	8.4%
Drugs	9.1%	10.8%	5.3%
Disturbing Peace	12.3%	10.5%	16.0%
Misdemeanor against property	23.0%	23.1%	22.9%
Incorrigible, runaway	28.2%	27.8%	29.0%
Citations	--	--	--
Juvenile Detained			
Yes	19.9%	20.9%	17.6%
No	80.1%	79.1%	82.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	45.3%	49.8%	35.9%
4:01 p.m. to 10:00 p.m.	37.6%	31.5%	50.4%
10:01 p.m. to 7:59 a.m.	17.1%	18.7%	13.7%
Subsequent Complaint			
Yes	53.4%	61.7%	35.9%
No	46.6%	38.3%	64.1%
Average # of Days to Subsequent Complaint (Standard Deviation)	112.5 (103.1)	115.0 (104.1)	103.4 (100.0)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.8%	2.9%	2.1%
Felony Against Property	13.3%	12.9%	14.9%
Hindering Justice	2.3%	2.3%	2.1%
Misdemeanor Against Person	4.1%	4.1%	4.3%
Drugs	9.6%	9.4%	10.6%
Disturbing Peace	17.4%	18.1%	14.9%
Misdemeanor against property	14.2%	15.2%	10.6%
Incorrigible, runaway	36.2%	35.2%	40.4%
Citations	--	--	--

Table B-19. Characteristics of the Population with Two Referrals - Gila County

Variable	Population (N = 163)	Risk Needs (N = 76)	No Risk Needs (N = 87)
Age at First Referral			
8 - 11.99 years	17.2%	19.7%	14.9%
12 - 15.99 years	58.3%	56.6%	59.8%
16 - 17.00 years	24.5%	23.7%	25.3%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	17.2%	11.8%	21.8%
Indian	4.9%	1.3%	8.0%
White	77.9%	86.8%	70.1%
Gender			
Female	32.5%	31.6%	33.3%
Male	67.5%	68.4%	66.7%
Severity of Most Severe Current Offense			
Felony Against Person	1.2%	--	2.3%
Felony Against Property	11.0%	14.5%	8.0%
Hindering Justice	1.2%	--	2.3%
Misdemeanor Against Person	9.2%	9.2%	9.2%
Drugs	5.5%	3.9%	6.9%
Disturbing Peace	21.5%	22.4%	20.7%
Misdemeanor against property	13.5%	15.8%	11.5%
Incorrigible, runaway	36.2%	34.2%	37.9%
Citations	0.6%	--	1.1%
Juvenile Detained			
Yes	9.8%	11.8%	8.0%
No	90.2%	88.2%	92.0%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	51.3%	52.8%	50.0%
4:01 p.m. to 10:00 p.m.	33.3%	29.2%	37.2%
10:01 p.m. to 7:59 a.m.	15.3%	18.1%	12.8%
Subsequent Complaint			
Yes	58.3%	75.0%	43.7%
No	41.7%	25.0%	56.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	103.6 (99.6)	115.2 (105.6)	86.3 (88.2)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.1%	3.5%	--
Felony Against Property	9.5%	8.8%	10.5%
Hindering Justice	6.3%	3.5%	10.5%
Misdemeanor Against Person	10.5%	12.3%	7.9%
Drugs	7.4%	8.8%	5.3%
Disturbing Peace	16.8%	21.1%	10.5%
Misdemeanor against property	15.8%	19.3%	10.5%
Incorrigible, runaway	31.6%	22.8%	44.7%
Citations	--	--	--

Table B-20. Characteristics of the Population with Two Referrals - Graham County

Variable	Population (N = 93)	Risk Needs (N = 36)	No Risk Needs (N = 57)
Age at First Referral			
8 - 11.99 years	22.6%	16.7%	26.3%
12 - 15.99 years	63.4%	69.4%	59.6%
16 - 17.00 years	14.0%	13.9%	14.0%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	2.2%	2.8%	1.8%
Hispanic	26.9%	27.8%	26.3%
Indian	3.2%	--	5.3%
White	67.7%	69.4%	66.7%
Gender			
Female	26.9%	25.0%	28.1%
Male	73.1%	75.0%	71.9%
Severity of Most Severe Current Offense			
Felony Against Person	3.2%	--	5.3%
Felony Against Property	16.1%	11.1%	19.3%
Hindering Justice	1.1%	--	1.8%
Misdemeanor Against Person	6.5%	2.8%	8.8%
Drugs	6.5%	2.8%	8.8%
Disturbing Peace	14.0%	13.9%	14.0%
Misdemeanor against property	19.4%	22.2%	17.5%
Incorrigible, runaway	33.3%	47.2%	24.6%
Citations	--	--	--
Juvenile Detained			
Yes	10.8%	2.8%	15.8%
No	89.2%	97.2%	84.2%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	30.1%	22.2%	35.1%
4:01 p.m. to 10:00 p.m.	39.8%	30.6%	45.6%
10:01 p.m. to 7:59 a.m.	30.1%	47.2%	19.3%
Subsequent Complaint			
Yes	57.0%	63.9%	52.6%
No	43.0%	36.1%	47.4%
Average # of Days to Subsequent Complaint (Standard Deviation)	123.4 (102.0)	113.7 (95.0)	130.7 (108.1)
Severity of Alleged Subsequent Offense			
Felony Against Person	1.9%	--	3.3%
Felony Against Property	13.2%	4.3%	20.0%
Hindering Justice	11.3%	4.3%	16.7%
Misdemeanor Against Person	9.4%	17.4%	3.3%
Drugs	11.3%	4.3%	16.7%
Disturbing Peace	13.2%	13.0%	13.3%
Misdemeanor against property	17.0%	8.7%	23.3%
Incorrigible, runaway	22.6%	47.8%	3.3%
Citations	--	--	--

Table B-21. Characteristics of the Population with Two Referrals - Greenlee County

Variable	Population (N = 37)	Risk Needs (N = 14)	No Risk Needs (N = 23)
Age at First Referral			
8 - 11.99 years	16.2%	21.4%	13.0%
12 - 15.99 years	48.6%	42.9%	52.2%
16 - 18.00 years	35.1%	35.7%	34.8%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	35.1%	21.4%	43.5%
Indian	--	--	--
White	64.9%	78.6%	56.5%
Gender			
Female	35.1%	21.4%	43.5%
Male	64.9%	78.6%	56.5%
Severity of Most Severe Current Offense			
Felony Against Person	8.1%	7.1%	8.7%
Felony Against Property	13.5%	21.4%	8.7%
Hindering Justice	8.1%	14.3%	4.3%
Misdemeanor Against Person	16.2%	21.4%	13.0%
Drugs	2.7%	7.1%	--
Disturbing Peace	16.2%	7.1%	21.7%
Misdemeanor against property	5.4%	14.3%	--
Incorrigible, runaway	29.7%	7.1%	43.5%
Citations	--	--	--
Juvenile Detained			
Yes	10.8%	21.4%	4.3%
No	89.2%	78.6%	95.7%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	32.1%	44.4%	26.3%
4:01 p.m. to 10:00 p.m.	46.4%	44.4%	47.4%
10:01 p.m. to 7:59 a.m.	21.4%	11.2%	26.3%
Subsequent Complaint			
Yes	54.1%	78.6%	39.1%
No	45.9%	21.4%	60.9%
Average # of Days to Subsequent Complaint (Standard Deviation)	75.1 (66.2)	68.3 (51.9)	83.3 (83.0)
Severity of Alleged Subsequent Offense			
Felony Against Person	--	--	--
Felony Against Property	20.0%	27.3%	11.1%
Hindering Justice	35.0%	54.5%	11.1%
Misdemeanor Against Person	--	--	--
Drugs	--	--	--
Disturbing Peace	15.0%	--	33.3%
Misdemeanor against property	5.0%	--	11.1%
Incorrigible, runaway	25.0%	18.2%	33.3%
Citations	--	--	--

Table B-22. Characteristics of the Population with Two Referrals - LaPaz County

Variable	Population (N = 31)	Risk Needs (N = 4)	No Risk Needs (N = 27)
Age at First Referral			
8 - 11.99 years	6.5%	--	7.4%
12 - 15.99 years	67.7%	50.0%	70.4%
16 - 17.00 years	25.8%	50.0%	22.2%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	3.2%	--	3.7%
Hispanic	35.5%	50.0%	33.3%
Indian	--	--	--
White	61.3%	50.0%	63.0%
Gender			
Female	16.1%	25.0%	14.8%
Male	83.9%	75.0%	85.2%
Severity of Most Severe Current Offense			
Felony Against Person	3.2%	--	3.7%
Felony Against Property	22.6%	25.0%	22.2%
Hindering Justice	3.2%	--	3.7%
Misdemeanor Against Person	6.5%	25.0%	3.7%
Drugs	9.7%	--	11.1%
Disturbing Peace	16.1%	50.0%	11.1%
Misdemeanor against property	3.2%	--	3.7%
Incorrigible, runaway	35.5%	--	40.7%
Citations	--	--	--
Juvenile Detained			
Yes	19.4%	25.0%	18.5%
No	80.6%	75.0%	81.5%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	22.6%	25.0%	22.2%
4:01 p.m. to 10:00 p.m.	29.0%	50.0%	25.9%
10:01 p.m. to 7:59 a.m.	48.4%	25.0%	51.9%
Subsequent Complaint			
Yes	74.2%	50.0%	77.8%
No	25.8%	50.0%	22.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	155.5 (117.2)	97.0 (72.1)	161.1 (120.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.3%	50.0%	--
Felony Against Property	4.3%	--	4.8%
Hindering Justice	4.3%	--	4.8%
Misdemeanor Against Person	8.7%	--	9.5%
Drugs	17.4%	--	19.0%
Disturbing Peace	13.0%	--	14.3%
Misdemeanor against property	4.3%	--	4.8%
Incorrigible, runaway	43.5%	50.0	42.9%
Citations	–	--	--

Table B-23. Characteristics of the Population with Two Referrals - Maricopa County

Variable	Population (N = 4,260)	Risk Needs (N = 2,858)	No Risk Needs (N = 1,402)
Age at First Referral			
8 - 11.99 years	13.3%	13.6%	12.8%
12 - 15.99 years	62.5%	63.0%	61.4%
16 - 17.00 years	24.2%	23.4%	25.8%
Ethnicity			
Asian/Pacific Islander	0.6%	0.7%	0.4%
Black	9.4%	9.8%	8.6%
Hispanic	33.2%	32.8%	33.9%
Indian	2.9%	2.8%	3.0%
White	53.4%	53.2%	53.6%
Other	0.6%	0.7%	0.4%
Gender			
Female	31.1%	28.5%	36.4%
Male	68.9%	71.5%	63.6%
Severity of Most Severe Current Offense			
Felony Against Person	5.0%	5.5%^	4.0%
Felony Against Property	12.6%	15.4%	6.8%
Hindering Justice	4.5%	4.5%	4.4%
Misdemeanor Against Person	7.4%	8.3%	5.7%
Drugs	7.3%	8.4%	4.9%
Disturbing Peace	9.2%	10.3%	7.0%
Misdemeanor against property	18.5%	22.0%	11.3%
Incorrigible, runaway	35.3%	25.3%	55.6%
Citations	0.3%	0.3%	0.4%
Juvenile Detained			
Yes	7.8%	9.4%	4.7%
No	92.2%	90.6%	95.3%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	37.7%	39.5%	32.1%
4:01 p.m. to 10:00 p.m.	32.6%	34.2%	27.5%
10:01 p.m. to 7:59 a.m.	29.7%	26.4%	40.4%
Subsequent Complaint			
Yes	58.5%	65.3%	44.7%
No	41.5%	34.7%	55.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	124.2 (103.5)	119.9 (102.0)	137.2 (106.8)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.6%	4.9%	3.8%
Felony Against Property	13.5%	14.5%	10.7%
Hindering Justice	9.1%	10.4%	5.1%
Misdemeanor Against Person	7.1%	7.5%	6.1%
Drugs	7.4%	7.4%	7.3%
Disturbing Peace	9.9%	9.7%	10.5%
Misdemeanor against property	14.4%	15.2%	12.3%
Incorrigible, runaway	33.4%	30.0%	43.6%
Citations	0.4%	0.4%	0.5%

Table B-24. Characteristics of the Population with Two Referrals - Mohave County

Variable	Population (N = 353)	Risk Needs (N = 203)	No Risk Needs (N =150)
Age at First Referral			
8 - 11.99 years	16.1%	16.3%	16.0%
12 - 15.99 years	62.0%	64.5%	58.7%
16 - 17.00 years	21.8%	19.2%	25.3%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	1.4%	1.5%	1.3%
Hispanic	9.3%	9.9%	8.7%
Indian	0.8%	1.0%	0.7%
White	88.4%	87.7%	89.3%
Gender			
Female	30.0%	23.6%	38.7%
Male	70.0%	76.4%	61.3%
Severity of Most Severe Current Offense			
Felony Against Person	5.1%	5.4%	4.7%
Felony Against Property	13.0%	16.3%	8.7%
Hindering Justice	1.1%	1.0%	1.3%
Misdemeanor Against Person	8.8%	10.3%	6.7%
Drugs	7.1%	8.4%	5.3%
Disturbing Peace	16.7%	20.2%	12.0%
Misdemeanor against property	17.8%	19.2%	16.0%
Incorrigible, runaway	30.3%	19.2%	45.3%
Citations	--	--	--
Juvenile Detained			
Yes	7.6%	9.4%	5.3%
No	92.4%	90.6%	94.7%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	50.4%	50.7%	50.0%
4:01 p.m. to 10:00 p.m.	30.6%	31.5%	29.3%
10:01 p.m. to 7:59 a.m.	19.0%	17.7%	20.7%
Subsequent Complaint			
Yes	55.8%	60.6%	49.3%
No	44.2%	39.4%	50.7%
Average # of Days to Subsequent Complaint (Standard Deviation)	105.2 (100.9)	112.9 (101.5)	92.3 (99.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	7.1%	6.5%	8.1%
Felony Against Property	14.7%	16.3%	12.2%
Hindering Justice	6.6%	5.7%	8.1%
Misdemeanor Against Person	8.1%	8.1%	8.1%
Drugs	5.1%	7.3%	1.4%
Disturbing Peace	16.2%	16.3%	16.2%
Misdemeanor against property	15.7%	19.5%	9.5%
Incorrigible, runaway	26.4%	20.3%	36.5%
Citations	--	--	--

Table B-25. Characteristics of the Population with Two Referrals - Navajo County

Variable	Population (N = 209)	Risk Needs (N = 62)	No Risk Needs (N = 147)
Age at First Referral			
8 - 11.99 years	20.6%	17.7%	21.8%
12 - 15.99 years	53.6%	56.5%	52.4%
16 - 17.00 years	25.8%	25.8%	25.9%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	1.0%	--	1.4%
Hispanic	11.5%	6.5%	13.6%
Indian	30.6%	24.2%	33.3%
White	56.5%	69.4%	51.0%
Other	0.5%	--	0.7%
Gender			
Female	32.5%	35.5%	31.3%
Male	67.5%	64.5%	68.7%
Severity of Most Severe Current Offense			
Felony Against Person	1.0%	1.6%	0.7%
Felony Against Property	12.0%	8.1%	13.6%
Hindering Justice	1.4%	1.6%	1.4%
Misdemeanor Against Person	7.7%	14.5%	4.8%
Drugs	7.2%	4.8%	8.2%
Disturbing Peace	15.8%	16.1%	15.6%
Misdemeanor against property	13.4%	11.3%	14.3%
Incorrigible, runaway	41.6%	41.9%	41.5%
Citations	--	--	--
Juvenile Detained			
Yes	12.9%	21.0%	9.5%
No	87.1%	79.0%	90.5%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.7%	40.3%	49.6%
4:01 p.m. to 10:00 p.m.	31.2%	38.7%	27.7%
10:01 p.m. to 7:59 a.m.	22.1%	21.0%	22.6%
Subsequent Complaint			
Yes	56.9%	59.7%	55.8%
No	43.1%	40.3%	44.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	124.8 (102.4)	128.4 (100.4)	123.2 (103.9)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.4%	5.4%	2.4%
Felony Against Property	7.6%	5.4%	8.5%
Hindering Justice	5.9%	8.1%	4.9%
Misdemeanor Against Person	10.1%	2.7%	13.4%
Drugs	7.6%	8.1%	7.3%
Disturbing Peace	13.4%	18.9%	11.0%
Misdemeanor against property	12.6%	16.2%	11.0%
Incorrigible, runaway	37.0%	32.4%	39.0%
Citations	2.5%	2.7%	2.4%

Table B-26. Characteristics of the Population with Two Referrals - Pima County

Variable	Population (N = 2,217)	Risk Needs (N = 1,562)	No Risk Needs (N = 655)
Age at First Referral			
8 - 11.99 years	19.8%	20.7%	17.7%
12 - 15.99 years	59.9%	60.9%	57.6%
16 - 17.00 years	20.3%	18.4%	24.7%
Ethnicity			
Asian/Pacific Islander	0.8%	0.9%	0.6%
Black	6.6%	6.6%	6.7%
Hispanic	44.5%	44.8%	43.9%
Indian	3.9%	3.7%	4.4%
White	43.9%	43.8%	44.2%
Other	0.2%	0.3%	0.2%
Gender			
Female	38.5%	39.7%	35.6%
Male	61.5%	60.3%	64.4%
Severity of Most Severe Current Offense			
Felony Against Person	3.1%	3.4%	2.3%
Felony Against Property	6.2%	6.6%	5.3%
Hindering Justice	1.5%	1.3%	2.1%
Misdemeanor Against Person	12.9%	14.0%	10.5%
Drugs	10.9%	12.2%	7.8%
Disturbing Peace	19.6%	18.1%	23.2%
Misdemeanor against property	13.6%	14.5%	11.3%
Incorrigible, runaway	32.2%	30.0%	27.4%
Citations	--	--	--
Juvenile Detained			
Yes	18.8%	23.2%	8.1%
No	81.2%	76.8%	91.9%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	44.5%	47.0%	38.5%
4:01 p.m. to 10:00 p.m.	29.5%	30.8%	26.3%
10:01 p.m. to 7:59 a.m.	26.1%	22.2%	35.3%
Subsequent Complaint			
Yes	56.2%	56.1%	56.6%
No	43.8%	43.9%	43.4%
Average # of Days to Subsequent Complaint (Standard Deviation)	116.6 (101.9)	113.4 (100.4)	123.9 (105.2)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.3%	3.3%	3.2%
Felony Against Property	6.0%	5.6%	7.01%
Hindering Justice	3.6%	3.5%	3.8%
Misdemeanor Against Person	15.0%	15.8%	13.2%
Drugs	9.7%	9.1%	11.1%
Disturbing Peace	18.4%	18.6%	18.1%
Misdemeanor against property	12.1%	11.4%	13.7%
Incorrigible, runaway	31.8%	32.6%	29.9%
Citations	--	--	--

Table B-27. Characteristics of the Population with Two Referrals - Pinal County

Variable	Population (N = 400)	Risk Needs (N = 170)	No Risk Needs (N = 230)
Age at First Referral			
8 - 11.99 years	18.0%	17.1%	18.7%
12 - 15.99 years	61.5%	67.1%	57.4%
16 - 17.00 years	20.5%	15.9%	23.9%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	7.5%	7.1%	7.8%
Hispanic	42.0%	41.8%	42.2%
Indian	7.8%	6.5%	8.7%
White	42.8%	44.7%	41.3%
Gender			
Female	24.5%	25.9%	23.5%
Male	75.5%	74.1%	76.5%
Severity of Most Severe Current Offense	3.5%	4.7%	2.6%
Felony Against Person	14.3%	18.2%	11.3%
Felony Against Property	5.0%	3.5%	6.1%
Hindering Justice	13.3%	12.9%	13.5%
Misdemeanor Against Person	6.5%	9.4%	4.3%
Drugs	17.0%	17.1%	17.0%
Disturbing Peace	16.3%	17.1%	15.7%
Misdemeanor against property	22.0%	14.7%	27.4%
Incorrigible, runaway	2.3%	2.4%	2.2%
Citations			
Juvenile Detained			
Yes	11.5%	12.4%	10.9%
No	88.5%	87.6%	89.1%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	44.2%	47.6%	41.6%
4:01 p.m. to 10:00 p.m.	30.5%	28.0%	32.3%
10:01 p.m. to 7:59 a.m.	25.4%	24.4%	26.1%
Subsequent Complaint			
Yes	56.3%	59.4%	53.9%
No	43.8%	40.6%	46.1%
Average # of Days to Subsequent Complaint	128.8 (104.3)	123.3 (94.4)	133.2 (111.9)
Severity of Alleged Subsequent Offense	4.0%	2.0%	5.6%
Felony Against Person	11.1%	11.9%	10.5%
Felony Against Property	9.8%	13.9%	6.5%
Hindering Justice	13.8%	10.9%	16.1%
Misdemeanor Against Person	7.1%	7.9%	6.5%
Drugs	18.2%	16.2%	19.4%
Disturbing Peace	15.1%	20.8%	10.5%
Misdemeanor against property	18.7%	12.9%	23.4%
Incorrigible, runaway	2.2%	3.0%	1.6%
Citations			

Table B-28. Characteristics of the Population with Two Referrals - Santa Cruz County

Variable	Population (N = 75)	Risk Needs (N = 19)	No Risk Needs (N = 56)
Age at First Referral			
8 - 11.99 years	16.0%	26.3%	12.5%
12 - 15.99 years	53.3%	42.1%	57.1%
16 - 17.00 years	30.7%	31.6%	30.4%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	--	--	--
Hispanic	94.7%	89.5%	96.4%
Indian	--	--	--
White	5.3%	10.5%	3.6%
Gender			
Female	20.0%	10.5%	23.2%
Male	80.0%	89.5%	76.8%
Severity of Most Severe Current Offense	13.3%	15.8%	12.5%
Felony Against Person	29.3%	15.8%	33.9%
Felony Against Property	1.3%	--	1.8%
Hindering Justice	13.3%	10.5%	14.3%
Misdemeanor Against Person	14.7%	26.3%	10.7%
Drugs	9.3%	10.5%	8.9%
Disturbing Peace	5.3%	10.5%	3.6%
Misdemeanor against property	12.0%	10.5%	12.5%
Incorrigible, runaway	1.3%	--	1.8%
Citations			
Juvenile Detained			
Yes	30.7%	26.3%	32.1%
No	69.3%	73.7%	67.9%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	36.0%	42.1%	33.9%
4:01 p.m. to 10:00 p.m.	42.7%	42.1%	42.9%
10:01 p.m. to 7:59 a.m.	21.3%	15.8%	23.2%
Subsequent Complaint			
Yes	65.3%	68.4%	64.3%
No	34.7%	31.6%	35.7%
Average # of Days to Subsequent Complaint	156.7 (114.0)	169.7 (125.1)	152.0 (111.2)
Severity of Alleged Subsequent Offense	8.2%	15.4%	5.6%
Felony Against Person	20.4%	30.8%	16.7%
Felony Against Property	8.2%	--	11.1%
Hindering Justice	12.2%	--	16.7%
Misdemeanor Against Person	16.3%	7.7%	19.4%
Drugs	10.2%	15.4%	8.3%
Disturbing Peace	6.1%	23.1%	--
Misdemeanor against property	14.3%	--	19.4%
Incorrigible, runaway	4.1%	7.7%	2.8%
Citations			

Table B-29. Characteristics of the Population with Two Referrals - Yavapai County

Variable	Population (N = 350)	Risk Needs (N = 192)	No Risk Needs (N = 158)
Age at First Referral			
8 - 11.99 years	14.6%	14.6%	14.6%
12 - 15.99 years	60.6%	63.0%	57.6%
16 - 17.00 years	24.9%	22.4%	27.8%
Ethnicity			
Asian/Pacific Islander	--	--	--
Black	1.4%	1.6%	1.3%
Hispanic	6.9%	6.8%	7.0%
Indian	3.1%	2.6%	3.8%
White	88.6%	89.1%	88.0%
Gender			
Female	29.1%	29.7%	28.5%
Male	70.9%	70.3%	71.5%
Severity of Most Severe Current Offense			
Felony Against Person	4.9%	5.7%	3.8%
Felony Against Property	23.7%	22.9%	24.7%
Hindering Justice	2.0%	1.0%	3.2%
Misdemeanor Against Person	8.0%	8.3%	7.6%
Drugs	8.3%	7.8%	8.9%
Disturbing Peace	15.4%	12.5%	19.0%
Misdemeanor against property	15.1%	18.2%	11.4%
Incorrigible, runaway	22.6%	23.4%	21.5%
Citations	--	--	--
Juvenile Detained			
Yes	24.3%	24.5%	24.1%
No	75.7%	75.5%	75.9%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	45.7%	43.2%	48.7%
4:01 p.m. to 10:00 p.m.	31.3%	29.7%	33.3%
10:01 p.m. to 7:59 a.m.	23.0%	27.1%	17.9%
Subsequent Complaint			
Yes	53.1%	56.3%	49.4%
No	46.9%	43.8%	50.6%
Average # of Days to Subsequent Complaint (Standard Deviation)	122.5 (100.6)	126.4 (102.5)	117.0 (98.4)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.3%	2.8%	6.4%
Felony Against Property	22.0%	19.4%	25.6%
Hindering Justice	4.8%	5.6%	3.8%
Misdemeanor Against Person	6.5%	8.3%	3.8%
Drugs	14.0%	13.0%	15.4%
Disturbing Peace	19.4%	21.3%	16.7%
Misdemeanor against property	10.2%	13.0%	6.4%
Incorrigible, runaway	18.8%	16.7%	21.8%
Citations	--	--	--

Table B-30. Characteristics of the Population with Two Referrals - Yuma County

Variable	Population (N = 406)	Risk Needs (N = 197)	No Risk Needs (N =209)
Age at First Referral			
8 - 11.99 years	21.4%	22.8%	20.1%
12 - 15.99 years	59.9%	60.4%	59.3%
16 - 17.00 years	18.7%	16.8%	20.6%
Ethnicity			
Asian/Pacific Islander	0.7%	1.0%	0.5%
Black	3.0%	3.6%	2.4%
Hispanic	61.1%	59.9%	62.2%
Indian	3.4%	5.1%	1.9%
White	31.8%	30.5%	33.0%
Gender			
Female	31.3%	27.9%	34.4%
Male	68.7%	72.1%	65.5%
Severity of Most Severe Current Offense			
Felony Against Person	3.4%	3.6%	3.3%
Felony Against Property	7.6%	11.7%	3.8%
Hindering Justice	15.8%	9.1%	22.0%
Misdemeanor Against Person	6.7%	10.2%	3.3%
Drugs	8.1%	13.2%	3.3%
Disturbing Peace	10.8%	11.2%	10.5%
Misdemeanor against property	12.3%	15.7%	9.1%
Incorrigible, runaway	35.2%	25.4%	44.5%
Citations	--	--	--
Juvenile Detained			
Yes	7.1%	10.2%	4.3%
No	92.9%	89.8%	95.7%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	42.1%	47.4%	36.5%
4:01 p.m. to 10:00 p.m.	27.6%	28.9%	26.3%
10:01 p.m. to 7:59 a.m.	30.3%	23.7%	37.1%
Subsequent Complaint			
Yes	60.3%	65.5%	55.5%
No	39.7%	34.5%	44.5%
Average # of Days to Subsequent Complaint (Standard Deviation)	110.9 (97.7)	118.0 (97.0)	103.0 (98.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.7%	4.7%	2.6%
Felony Against Property	7.3%	7.0%	7.8%
Hindering Justice	24.9%	33.3%	15.5%
Misdemeanor Against Person	4.9%	2.3%	7.8%
Drugs	10.6%	9.3%	12.1%
Disturbing Peace	8.2%	4.7%	12.1%
Misdemeanor against property	10.2%	10.9%	9.5%
Incorrigible, runaway	30.2%	27.9%	32.8%
Citations	--	--	--

Table B-31. Characteristics of the Population with Three or More Referrals - Apache County

Variable	Population (N = 105)	Risk Needs (N = 33)	No Risk Needs (N = 72)
Age at First Referral			
8 - 11.99 years	26.7%	30.3%	25.0%
12 - 15.99 years	58.1%	51.5%	61.1%
16 - 17.00 years	15.2%	18.2%	13.9%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	1.9%	3.0%	1.4%
Hispanic	29.5%	36.4%	26.4%
Indian	11.4%	–	16.7%
White	57.1%	60.6%	55.6%
Gender			
Female	36.2%	18.2%	44.4%
Male	63.8%	81.8%	55.6%
Severity of Most Severe Current Offense			
Felony Against Person	5.7%	6.1%	5.6%
Felony Against Property	18.1%	24.2%	15.3%
Hindering Justice	16.2%	21.2%	13.9%
Misdemeanor Against Person	5.7%	6.1%	5.6%
Drugs	6.7%	9.1%	5.6%
Disturbing Peace	11.4%	9.1%	12.5%
Misdemeanor against property	1.9%	–	2.8%
Incorrigible, runaway	34.3%	24.2%	38.9%
Citations	--	--	--
Juvenile Detained			
Yes	32.4%	39.4%	29.2%
No	67.6%	60.6%	70.8%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.3%	45.2%	46.9%
4:01 p.m. to 10:00 p.m.	23.2%	22.6%	23.4%
10:01 p.m. to 7:59 a.m.	30.5%	32.3%	29.7%
Subsequent Complaint			
Yes	79%	90.9%	73.6%
No	21%	9.1%	26.4%
Average # of Days to Subsequent Complaint (Standard Deviation)	73.7 (88.4)	92.6 (97.2)	65.0 (83.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	1.2%	–	1.9%
Felony Against Property	13.3%	20.0%	9.4%
Hindering Justice	22.9%	26.7%	20.8%
Misdemeanor Against Person	10.8%	10.0%	11.3%
Drugs	6.0%	3.3%	7.5%
Disturbing Peace	13.3%	13.3%	13.2%
Misdemeanor against property	4.8%	3.3%	5.7%
Incorrigible, runaway	27.7%	23.3%	30.2%
Citations	–	–	–

Table B-32. Characteristics of the Population with Three or More Referrals - Cochise County

Variable	Population (N = 440)	Risk Needs (N =228)	No Risk Needs (N =212)
Age at First Referral			
8 - 11.99 years	30.9%	31.3%	30.7%
12 - 15.99 years	56.8%	55.7%	58.0%
16 - 17.00 years	12.3%	13.2%	11.3%
Ethnicity			
Asian/Pacific Islander	0.5%	0.4%	0.5%
Black	10.0%	11.4%	8.5%
Hispanic	44.5%	44.7%	44.3%
Indian	–	–	–
White	44.8%	43.4%	46.2%
Other	0.2%	--	0.5%
Gender			
Female	27.5%	30.7%	24.1%
Male	72.5%	69.3%	75.9%
Severity of Most Severe Current Offense			
Felony Against Person	1.8%	1.8%	1.9%
Felony Against Property	10.9%	9.6%	12.3%
Hindering Justice	15.9%	10.5%	21.7%
Misdemeanor Against Person	8.6%	9.6%	7.5%
Drugs	6.1%	8.8%	3.3%
Disturbing Peace	14.8%	19.3%	9.9%
Misdemeanor against property	14.5%	16.2%	12.7%
Incorrigible, runaway	27.0%	24.1%	30.2%
Citations	0.2%	--	0.5%
Juvenile Detained			
Yes	12.5%	9.6%	15.6%
No	87.5%	90.4%	84.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	44.1%	41.7%	46.7%
4:01 p.m. to 10:00 p.m.	33.3%	32.4%	32.4%
10:01 p.m. to 7:59 a.m.	22.7%	25.9%	25.9%
Subsequent Complaint			
Yes	77.7%	75.9%	79.7%
No	22.3%	24.1%	20.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	73.1 (88.7)	74.1 (86.2)	71.9 (91.5)
Severity of Alleged Subsequent Offense			
Felony Against Person	1.5%	0.6%	2.4%
Felony Against Property	14.3%	13.3%	15.4%
Hindering Justice	20.5%	22.0%	18.9%
Misdemeanor Against Person	7.9%	8.1%	7.7%
Drugs	7.9%	8.7%	7.1%
Disturbing Peace	10.5%	8.7%	12.4%
Misdemeanor against property	10.8%	11.0%	10.7%
Incorrigible, runaway	25.7%	27.7%	23.7%
Citations	0.9%	--	1.8%

Table B-33. Characteristics of the Population with Three or More Referrals - Coconino County

Variable	Population (N = 474)	Risk Needs (N =299)	No Risk Needs (N =175)
Age at First Referral			
8 - 11.99 years	30.8%	28.1%	35.4%
12 - 15.99 years	57.0%	59.5%	52.6%
16 - 17.00 years	12.2%	12.4%	12.0%
Ethnicity			
Asian/Pacific Islander	--	–	–
Black	4.4%	3.0%	6.9%
Hispanic	16.5%	17.1%	15.4%
Indian	26.8%	27.8%	25.1%
White	52.1%	51.8%	52.6%
Other	0.2%	0.3%	--
Gender			
Female	27.2%	24.1%	32.6%
Male	72.8%	75.9%	67.4%
Severity of Most Severe Current Offense			
Felony Against Person	2.3%	2.7%	1.7%
Felony Against Property	11.6%	13.0%	11.6%
Hindering Justice	3.6%	2.7%	3.6%
Misdemeanor Against Person	5.5%	5.0%	5.5%
Drugs	12.0%	12.4%	12.0%
Disturbing Peace	17.3%	15.7%	17.3%
Misdemeanor against property	13.9%	12.7%	13.9%
Incorrigible, runaway	33.8%	35.8%	30.3%
Citations	--	--	--
Juvenile Detained			
Yes	23.6%	21.4%	27.4%
No	76.4%	78.6%	72.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	46.4%	46.3%	46.6%
4:01 p.m. to 10:00 p.m.	29.2%	26.8%	33.3%
10:01 p.m. to 7:59 a.m.	24.4%	26.8%	20.1%
Subsequent Complaint			
Yes	69.6%	75.3%	60.0%
No	30.4%	47.5%	40.0%
Average # of Days to Subsequent Complaint (Standard Deviation)	68.3 (94.5)	74.9 (96.0)	57.0 (91.0)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.7%	2.7%	2.9%
Felony Against Property	11.2%	12.0%	9.5%
Hindering Justice	7.0%	7.6%	5.7%
Misdemeanor Against Person	7.6%	6.2%	10.5%
Drugs	17.6%	17.3%	18.1%
Disturbing Peace	14.8%	16.0%	12.4%
Misdemeanor against property	10.0%	10.7%	8.6%
Incorrigible, runaway	29.1%	27.6%	32.4%
Citations	--	--	-

Table B-34. Characteristics of the Population with Three or More Referrals - Gila County

Variable	Population (N = 215)	Risk Needs (N = 88)	No Risk Needs (N = 127)
Age at First Referral			
8 - 11.99 years	27.0%	25.0%	28.3%
12 - 15.99 years	60.9%	64.8%	58.3%
16 - 17.00 years	12.1%	10.2%	13.4%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	0.9%	–	1.6%
Hispanic	24.2%	21.6%	26.0%
Indian	3.7%	2.3%	4.7%
White	71.2%	76.1%	67.7%
Gender			
Female	26.5%	23.9%	28.3%
Male	73.5%	76.1%	71.7%
Severity of Most Severe Current Offense			
Felony Against Person	0.9%	2.3%	–
Felony Against Property	9.8%	12.5%	7.9%
Hindering Justice	8.4%	9.1%	7.9%
Misdemeanor Against Person	8.8%	12.5%	6.3%
Drugs	8.8%	9.1%	8.7%
Disturbing Peace	21.9%	20.5%	22.8%
Misdemeanor against property	14.4%	9.1%	18.1%
Incorrigible, runaway	27.0%	25.0%	28.3%
Citations	--	--	--
Juvenile Detained			
Yes	17.7%	21.6%	15.0%
No	82.3%	78.4%	85.0%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.4%	40.0%	52.7%
4:01 p.m. to 10:00 p.m.	30.0%	41.3%	21.8%
10:01 p.m. to 7:59 a.m.	22.6%	18.8%	25.5%
Subsequent Complaint			
Yes	71.2%	87.5%	59.8%
No	28.8%	12.5%	40.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	63.2 (79.9)	67.0 (77.7)	60.6 (81.5)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.6%	2.6%	2.6%
Felony Against Property	9.8%	7.8%	11.8%
Hindering Justice	16.3%	16.9%	15.8%
Misdemeanor Against Person	9.2%	7.8%	10.5%
Drugs	9.8%	9.1%	10.5%
Disturbing Peace	15.0%	15.6%	14.5%
Misdemeanor against property	7.8%	7.8%	7.9%
Incorrigible, runaway	29.4%	32.5%	26.3%
Citations	--	–	--

Table B-35. Characteristics of the Population with Three or More Referrals - Graham County

Variable	Population (N = 88)	Risk Needs (N = 30)	No Risk Needs (N = 58)
Age at First Referral			
8 - 11.99 years	44.3%	36.7%	48.3%
12 - 15.99 years	51.1%	56.7%	48.3%
16 - 17.00 years	4.5%	6.7%	3.4%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	1.1%	3.3%	–
Hispanic	42.0%	40.0%	43.1%
Indian	2.3%	3.3%	1.7%
White	54.5%	53.3%	55.2%
Gender			
Female	23.9%	23.3%	24.1%
Male	76.1%	76.7%	75.9%
Severity of Most Severe Current Offense			
Felony Against Person	3.4%	3.3%	3.4%
Felony Against Property	20.5%	20.0%	20.7%
Hindering Justice	9.1%	–	13.8%
Misdemeanor Against Person	5.7%	10.0%	3.4%
Drugs	8.0%	10.0%	6.9%
Disturbing Peace	17.0%	13.3%	19.0%
Misdemeanor against property	12.5%	20.0%	8.6%
Incorrigible, runaway	23.9%	23.3%	24.1%
Citations	--	--	--
Juvenile Detained			
Yes	25.0%	26.7%	24.1%
No	75.0%	73.3%	75.9%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	48.9%	46.7%	50.0%
4:01 p.m. to 10:00 p.m.	29.5%	33.3%	27.6%
10:01 p.m. to 7:59 a.m.	21.6%	20.0%	22.4%
Subsequent Complaint			
Yes	77.3%	70.0%	81.0%
No	22.7%	30.0%	19.0%
Average # of Days to Subsequent Complaint (Standard Deviation)	84.2 (96.8)	77.5 (102.5)	87.6 (94.4)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.4%	4.8%	4.3%
Felony Against Property	7.4%	4.8%	8.5%
Hindering Justice	10.3%	9.5%	10.6%
Misdemeanor Against Person	5.9%	–	8.5%
Drugs	2.9%	9.5%	–
Disturbing Peace	20.6%	23.8%	19.1%
Misdemeanor against property	10.3%	–	14.9%
Incorrigible, runaway	38.2%	47.6%	34.0%
Citations	--	--	--

Table B-36. Characteristics of the Population with Three or More Referrals - Greenlee County

Variable	Population (N = 34)	Risk Needs (N = 17)	No Risk Needs (N = 17)
Age at First Referral			
8 - 11.99 years	26.5%	41.2%	11.8%
12 - 15.99 years	52.9%	35.3%	70.6%
16 - 17.00 years	20.6%	23.5%	17.6%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	–	–	–
Hispanic	47.1%	52.9%	41.2%
Indian	–	–	–
White	52.9%	47.1%	58.8%
Gender			
Female	29.4%	11.8%	47.1%
Male	70.6%	88.2%	52.9%
Severity of Most Severe Current Offense			
Felony Against Person	--	–	–
Felony Against Property	17.6	35.3%	–
Hindering Justice	17.6	11.8%	23.5%
Misdemeanor Against Person	5.9	5.9%	5.9%
Drugs	--	–	--
Disturbing Peace	11.8	11.8%	11.8%
Misdemeanor against property	14.7	5.9%	23.5%
Incorrigible, runaway	32.4	29.4%	35.3%
Citations	--	--	--
Juvenile Detained			
Yes	23.5%	23.5%	23.5%
No	76.5%	76.5%	76.5%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	28.0%	33.3%	23.1%
4:01 p.m. to 10:00 p.m.	48.0%	41.7%	53.8%
10:01 p.m. to 7:59 a.m.	24.0%	25.0%	23.1%
Subsequent Complaint			
Yes	73.5%	88.2%	58.8%
No	26.5%	11.8%	41.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	71.1 (87.9)	68.6 (83.4)	73.5 (94.7)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.0%	6.7%	–
Felony Against Property	4.0%	–	10.0%
Hindering Justice	52.0%	53.3%	50.0%
Misdemeanor Against Person	8.0%	13.3%	–
Drugs	--	–	–
Disturbing Peace	12.0%	6.7%	20.0%
Misdemeanor against property	8.0%	6.7%	10.0%
Incorrigible, runaway	12.0%	13.3%	10.0%
Citations	--	--	--

Table B-37. Characteristics of the Population with Three or More Referrals - LaPaz County

Variable	Population (N = 27)	Risk Needs (N = 6)	No Risk Needs (N = 21)
Age at First Referral			
8 - 11.99 years	11.1%	–	14.3%
12 - 15.99 years	59.3%	66.7%	57.1%
16 - 17.00 years	29.6%	33.3%	28.6%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	–	–	–
Hispanic	29.6%	–	38.1%
Indian	–	–	–
White	70.4%	100.0%	61.9%
Gender			
Female	14.8%	33.3%	9.5%
Male	85.2%	66.7%	90.5%
Severity of Most Severe Current Offense			
Felony Against Person	3.7%	–	4.8%
Felony Against Property	3.7%	–	4.8%
Hindering Justice	3.7%	–	4.8%
Misdemeanor Against Person	3.7%	16.7%	–
Drugs	7.4%	–	9.5%
Disturbing Peace	14.8%	–	19.0%
Misdemeanor against property	7.4%	16.7%	4.8%
Incorrigible, runaway	55.6%	66.7%	52.4%
Citations	--	--	--
Juvenile Detained			
Yes	66.7%	83.3%	61.9%
No	33.3%	16.7%	33.3%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	29.6%	50.0%	23.8%
4:01 p.m. to 10:00 p.m.	33.3%	16.7%	38.1%
10:01 p.m. to 7:59 a.m.	37.0%	33.3%	38.1%
Subsequent Complaint			
Yes	66.7%	83.3%	61.9%
No	33.3%	16.7%	38.1%
Average # of Days to Subsequent Complaint (Standard Deviation)	60.1 (81.1)	56.3 (54.5)	61.1 (88.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	5.6%	–	7.7%
Felony Against Property	22.2%	40.0%	15.4%
Hindering Justice	11.1%	–	15.4%
Misdemeanor Against Person	5.6%	20.0%	–
Drugs	11.1%	–	15.4%
Disturbing Peace	16.7%	–	23.1%
Misdemeanor against property	--	–	--
Incorrigible, runaway	27.8%	40.0%	23.1%
Citations	--	--	–

Table B-38. Characteristics of the Population with Three or More Referrals - Maricopa

Variable	Population (N = 4,722)	Risk Needs (N = 3,265)	No Risk Needs (N = 1,457)
Age at First Referral			
8 - 11.99 years	24.0%	23.4%	25.5%
12 - 15.99 years	65.2%	65.4%	64.8%
16 - 17.00 years	10.8%	11.2%	9.7%
Ethnicity			
Asian/Pacific Islander	0.5%	0.6%	0.4%
Black	11.6%	12.1%	10.6%
Hispanic	36.7%	36.6%	36.9%
Indian	2.9%	2.5%	3.7%
White	47.9%	47.8%	47.9%
Other	0.4%	0.4%	0.4%
Gender			
Female	25.9%	24.6%	28.8%
Male	74.1%	75.4%	71.2%
Severity of Most Severe Current Offense			
Felony Against Person	5.3%	5.8%	4.1%
Felony Against Property	13.5%	14.2%	12.1%
Hindering Justice	14.2%	16.5%	9.0%
Misdemeanor Against Person	6.8%	7.1%	6.0%
Drugs	6.7%	7.2%	5.6%
Disturbing Peace	9.0%	9.2%	8.7%
Misdemeanor against property	13.2%	15.1%	8.9%
Incorrigible, runaway	30.8%	24.6%	44.8%
Citations	0.4%	0.3%	0.8%
Juvenile Detained			
Yes	12.3%	13.3%	10.0%
No	87.7%	86.7%	90.0%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	34.4%	35.4%	31.5%
4:01 p.m. to 10:00 p.m.	31.0%	32.5%	27.0%
10:01 p.m. to 7:59 a.m.	34.6%	32.0%	41.4%
Subsequent Complaint			
Yes	73.3%	78.0%	62.7%
No	26.7%	22.0%	37.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	81.7 (96.7)	87.2 (97.0)	69.4 (94.7)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.7%	4.4%	5.8%
Felony Against Property	14.0%	13.6%	14.9%
Hindering Justice	16.8%	20.1%	7.5%
Misdemeanor Against Person	7.0%	7.0%	7.1%
Drugs	6.8%	6.7%	7.0%
Disturbing Peace	8.4%	8.4%	8.4%
Misdemeanor against property	11.8%	12.3%	10.6%
Incorrigible, runaway	30.2%	27.4%	37.9%
Citations	0.3%	0.2%	0.8%

Table B-39. Characteristics of the Population with Three or More Referrals - Mohave County

Variable	Population (N = 402)	Risk Needs (N = 204)	No Risk Needs (N = 198)
Age at First Referral			
8 - 11.99 years	29.1%	27.0%	31.3%
12 - 15.99 years	60.2%	63.2%	57.1%
16 - 17.00 years	10.7%	9.8%	11.6%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	1.7%	1.5%	2.0%
Hispanic	7.7%	8.8%	6.6%
Indian	1.7%	2.0%	1.5%
White	88.8%	87.7%	89.9%
Gender			
Female	28.9%	28.9%	28.8%
Male	71.1%	71.1%	78.8%
Severity of Most Severe Current Offense			
Felony Against Person	5.2%	6.9%	3.5%
Felony Against Property	15.7%	18.1%	13.1%
Hindering Justice	9.5%	7.4%	11.6%
Misdemeanor Against Person	6.7%	6.9%	6.6%
Drugs	5.7%	7.4%	4.0%
Disturbing Peace	15.7%	14.7%	16.7%
Misdemeanor against property	13.2%	18.1%	8.1%
Incorrigible, runaway	27.9%	20.1%	35.9%
Citations	0.5%	0.5%	0.5%
Juvenile Detained			
Yes	13.9%	13.2%	14.6%
No	86.1%	86.8%	85.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	48.0%	51.0%	44.9%
4:01 p.m. to 10:00 p.m.	27.6%	27.0%	28.3%
10:01 p.m. to 7:59 a.m.	24.4%	22.1%	26.8%
Subsequent Complaint			
Yes	66.7%	70.1%	63.1%
No	33.3%	29.9%	36.9%
Average # of Days to Subsequent Complaint (Standard Deviation)	62.5 (87.9)	72.2 (94.9)	52.6 (79.2)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.1%	3.5%	4.8%
Felony Against Property	17.9%	15.4%	20.8%
Hindering Justice	13.4%	11.2%	16.0%
Misdemeanor Against Person	10.4%	10.5%	10.4%
Drugs	4.9%	3.5%	6.4%
Disturbing Peace	16.8%	18.9%	14.4%
Misdemeanor against property	10.1%	11.2%	8.8%
Incorrigible, runaway	22.4%	25.9%	18.4%
Citations	--	--	--

Table B-40. Characteristics of the Population with Three or More Referrals - Navajo County

Variable	Population (N = 207)	Risk Needs (N = 53)	No Risk Needs (N = 154)
Age at First Referral			
8 - 11.99 years	28.5%	22.6%	30.5%
12 - 15.99 years	58.9%	66.0%	56.5%
16 - 17.00 years	12.6%	11.3%	13.0%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	2.9%	1.9%	3.2%
Hispanic	12.1%	11.3%	12.3%
Indian	27.5%	3.8%	35.7%
White	57.5%	83.0%	48.7%
Gender			
Female	27.1%	32.1%	25.3%
Male	72.9%	67.9%	74.7%
Severity of Most Severe Current Offense			
Felony Against Person	1.9%	--	2.6%
Felony Against Property	10.6%	17.0%	8.4%
Hindering Justice	8.2%	13.2%	6.5%
Misdemeanor Against Person	6.3%	1.9%	7.8%
Drugs	9.7%	9.4%	9.7%
Disturbing Peace	13.5%	9.4%	14.9%
Misdemeanor against property	10.1%	9.4%	10.4%
Incorrigible, runaway	36.7%	37.7%	36.4%
Citations	2.9%	1.9%	3.2%
Juvenile Detained			
Yes	26.1%	27.3%	22.6%
No	73.9%	72.7%	77.4%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	47.6%	52.0%	46.0%
4:01 p.m. to 10:00 p.m.	30.7%	26.0%	32.4%
10:01 p.m. to 7:59 a.m.	21.7%	22.0%	21.6%
Subsequent Complaint			
Yes	72.5%	83.0%	68.8%
No	27.5%	17.0%	31.2%
Average # of Days to Subsequent Complaint (Standard Deviation)	78.9 (98.4)	83.0 (94.9)	77.4 (99.9)
Severity of Alleged Subsequent Offense			
Felony Against Person	4.0%	2.3%	4.7%
Felony Against Property	10.7%	9.1%	11.3%
Hindering Justice	13.3%	22.7%	9.4%
Misdemeanor Against Person	8.0%	6.8%	8.5%
Drugs	10.7%	15.9%	8.5%
Disturbing Peace	12.0%	11.4%	12.3%
Misdemeanor against property	9.3%	2.3%	12.3%
Incorrigible, runaway	29.3%	27.3%	30.2%
Citations	2.7%	2.3%	2.8%

Table B-41. Characteristics of the Population with Three or More Referrals - Pima County

Variable	Population (N = 2,630)	Risk Needs (N = 1,728)	No Risk Needs (N = 902)
Age at First Referral			
8 - 11.99 years	30.4%	29.3%	32.6%
12 - 15.99 years	60.9%	62.1%	58.5%
16 - 17.00 years	8.7%	8.6%	8.9%
Ethnicity			
Asian/Pacific Islander	0.5%	0.4%	0.6%
Black	8.9%	8.9%	8.9%
Hispanic	44.9%	45.3%	44.2%
Indian	3.3%	3.0%	4.1%
White	42.2%	42.4%	41.9%
Other	0.1%	0.1%	0.2%
Unknown	0.1%	0.1%	0.1%
Gender			
Female	34.0%	64.1%	30.4%
Male	66.0%	35.9%	69.6%
Severity of Most Severe Current Offense			
Felony Against Person	3.0%	3.8%	1.6%
Felony Against Property	7.3%	8.8%	4.3%
Hindering Justice	8.3%	8.4%	8.3%
Misdemeanor Against Person	13.7%	14.7%	13.7%
Drugs	9.0%	10.5%	9.0%
Disturbing Peace	19.4%	18.4%	19.4%
Misdemeanor against property	10.9%	11.4%	10.9%
Incorrigible, runaway	28.4%	24.0%	28.4%
Citations	--	--	--
Juvenile Detained			
Yes	70.3%	65.2%	20.0%
No	29.7%	34.8%	80.0%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	42.7%	45.1%	38.0%
4:01 p.m. to 10:00 p.m.	30.2%	31.1%	28.5%
10:01 p.m. to 7:59 a.m.	27.1%	23.8%	33.5%
Subsequent Complaint			
Yes	74.9%	74.5%	75.7%
No	25.1%	25.5%	24.3%
Average # of Days to Subsequent Complaint (Standard Deviation)	75.9 (93.4)	76.8 (93.8)	74.2 (92.5)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.0%	2.5%	4.1%
Felony Against Property	7.5%	7.0%	8.5%
Hindering Justice	11.8%	11.7%	12.0%
Misdemeanor Against Person	14.3%	14.5%	13.9%
Drugs	8.9%	9.0%	8.6%
Disturbing Peace	19.6%	19.4%	20.1%
Misdemeanor against property	9.6%	10.2%	8.6%
Incorrigible, runaway	25.2%	25.7%	24.2%
Citations	--	--	--

Table B-42. Characteristics of the Population with Three or More Referrals - Pinal County

Variable	Population (N = 415)	Risk Needs (N = 155)	No Risk Needs (N = 260)
Age at First Referral			
8 - 11.99 years	34.0%	34.8%	33.5%
12 - 15.99 years	58.1%	55.5%	59.6%
16 - 17.00 years	8.0%	9.7%	6.9%
Ethnicity			
Asian/Pacific Islander	0.2%	0.6%	–
Black	8.7%	9.7%	8.1%
Hispanic	46.5%	47.7%	45.8%
Indian	5.8%	8.4%	4.2%
White	38.8%	33.5%	41.9%
Gender			
Female	23.4%	21.3%	24.6%
Male	76.6%	78.7%	75.4%
Severity of Most Severe Current Offense			
Felony Against Person	4.6%	5.8%	3.8%
Felony Against Property	13.7%	17.4%	11.5%
Hindering Justice	13.3%	15.5%	11.9%
Misdemeanor Against Person	11.8%	13.5%	10.8%
Drugs	5.3%	7.1%	4.2%
Disturbing Peace	17.3%	16.8%	17.7%
Misdemeanor against property	12.0%	14.8%	10.4%
Incorrigible, runaway	16.9%	7.7%	22.3%
Citations	5.1%	1.3%	7.3%
Juvenile Detained			
Yes	21.0%	21.3%	20.8%
No	79.0%	78.7%	79.2%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	44.8%	50.0%	41.7%
4:01 p.m. to 10:00 p.m.	30.0%	30.3%	29.9%
10:01 p.m. to 7:59 a.m.	25.1%	19.7%	28.3%
Subsequent Complaint			
Yes	74.5%	76.1%	73.5%
No	25.5%	23.9%	26.5%
Average # of Days to Subsequent Complaint (Standard Deviation)	72.0 (89.5)	73.1 (91.8)	71.4 (88.3)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.9%	5.9%	2.6%
Felony Against Property	13.6%	13.6%	13.6%
Hindering Justice	19.1%	22.0%	17.3%
Misdemeanor Against Person	8.1%	7.6%	8.4%
Drugs	6.8%	4.2%	8.4%
Disturbing Peace	15.9%	16.9%	15.2%
Misdemeanor against property	12.6%	12.7%	12.6%
Incorrigible, runaway	16.5%	12.7%	18.8%
Citations	3.6%	4.2%	3.1%

Table B-43. Characteristics of the Population with Three or More Referrals - Santa Cruz

Variable	Population (N = 76)	Risk Needs (N = 17)	No Risk Needs (N = 59)
Age at First Referral			
8 - 11.99 years	25.0%	11.8%	16.9%
12 - 15.99 years	59.2%	70.6%	55.9%
16 - 17.00 years	15.8%	17.6%	27.1%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	1.3%	–	1.7%
Hispanic	96.1%	100.0%	94.9%
Indian	–	–	–
White	2.6%	--	3.4%
Gender			
Female	13.2%	5.9%	15.3%
Male	86.8%	94.1%	84.7%
Severity of Most Severe Current Offense			
Felony Against Person	3.9%	11.8%	1.7%
Felony Against Property	31.6%	29.4%	32.2%
Hindering Justice	7.9%	23.5%	3.4%
Misdemeanor Against Person	17.1%	11.8%	18.6%
Drugs	11.8%	5.9%	13.6%
Disturbing Peace	9.2%	5.9%	10.2%
Misdemeanor against property	3.9%	–	5.1%
Incorrigible, runaway	13.2%	11.%8	13.6%
Citations	1.3%	--	1.7%
Juvenile Detained			
Yes	46.1%	58.8%	42.4%
No	53.9%	41.2%	57.6%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	40.8%	29.4%	44.1%
4:01 p.m. to 10:00 p.m.	40.8%	47.1%	29.0%
10:01 p.m. to 7:59 a.m.	18.4%	23.5%	16.9%
Subsequent Complaint			
Yes	68.4%	76.5%	66.1%
No	31.6%	23.5%	33.9%
Average # of Days to Subsequent Complaint (Standard Deviation)	84.7 (103.3)	113.9 (119.7)	76.3 (97.6)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.8%	15.4%	–
Felony Against Property	23.1%	7.7%	28.2%
Hindering Justice	25.0%	30.8%	23.1%
Misdemeanor Against Person	7.7%	15.4%	5.1%
Drugs	9.6%	15.4%	7.7%
Disturbing Peace	5.8%	15.4%	2.6%
Misdemeanor against property	7.7%	–	10.3%
Incorrigible, runaway	11.5%	–	15.4%
Citations	5.8%	--	7.7%

Table B-44. Characteristics of the Population with Three or More Referrals - Yavapai County

Variable	Population (N = 366)	Risk Needs (N = 210)	No Risk Needs (N = 156)
Age at First Referral			
8 - 11.99 years	25.4%	26.7%	23.7%
12 - 15.99 years	62.8%	61.4%	64.7%
16 - 17.00 years	11.7%	11.9%	11.5%
Ethnicity			
Asian/Pacific Islander	–	–	–
Black	1.6%	2.4%	0.6%
Hispanic	9.0%	7.1%	11.5%
Indian	2.7%	1.4%	4.5%
White	86.3%	88.6%	–
Other	0.3%	0.5%	83.3%
Gender			
Female	23.8%	21.4%	26.9%
Male	76.2%	78.6%	73.1%
Severity of Most Severe Current Offense			
Felony Against Person	3.6%	4.8%	1.9%
Felony Against Property	22.4%	24.8%	19.2%
Hindering Justice	8.2%	9.5%	6.4%
Misdemeanor Against Person	6.3%	7.1%	5.1%
Drugs	10.9%	12.4%	9.0%
Disturbing Peace	12.3%	10.0%	15.4%
Misdemeanor against property	9.6%	8.6%	10.9%
Incorrigible, runaway	26.8%	22.9%	32.1%
Citations	--	--	--
Juvenile Detained			
Yes	36.1%	41.0%	29.5%
No	63.9%	59.0%	70.5%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	42.6%	40.5%	45.5%
4:01 p.m. to 10:00 p.m.	34.2%	33.8%	34.6%
10:01 p.m. to 7:59 a.m.	23.2%	25.7%	19.9%
Subsequent Complaint			
Yes	71.0%	75.2%	65.4%
No	29.0%	24.8%	34.6%
Average # of Days to Subsequent Complaint (Standard Deviation)	79.2 (96.2)	90.1 (100.2)	64.4 (88.7)
Severity of Alleged Subsequent Offense			
Felony Against Person	3.5%	1.9%	5.9%
Felony Against Property	19.2%	16.5%	23.5%
Hindering Justice	13.1%	14.6%	10.8%
Misdemeanor Against Person	6.9%	7.0%	6.9%
Drugs	7.7%	8.2%	6.9%
Disturbing Peace	17.7%	17.7%	17.6%
Misdemeanor against property	12.3%	12.0%	12.7%
Incorrigible, runaway	19.6%	22.2%	15.7%
Citations	--	--	--

Table B-45. Characteristics of the Population with Three or More Referrals - Yuma County

Variable	Population (N = 538)	Risk Needs (N = 286)	No Risk Needs (N = 252)
Age at First Referral			
8 - 11.99 years	27.7%	32.2%	22.6%
12 - 15.99 years	63.9%	60.5%	67.9%
16 - 17.00 years	8.4%	7.3%	9.5%
Ethnicity			
Asian/Pacific Islander	0.7%	0.3%	1.2%
Black	4.6%	4.9%	4.4%
Hispanic	63.6%	64.3%	62.7%
Indian	3.3%	4.9%	1.6%
White	27.7%	25.5%	30.2%
Gender			
Female	27.3%	22.7%	32.5%
Male	72.7%	77.3%	67.5%
Severity of Most Severe Current Offense			
Felony Against Person	4.3%	5.9%	2.4%
Felony Against Property	7.4%	9.8%	4.8%
Hindering Justice	28.8%	33.2%	23.8%
Misdemeanor Against Person	6.3%	7.0%	5.6%
Drugs	8.4%	11.5%	4.8%
Disturbing Peace	9.1%	5.9%	12.7%
Misdemeanor against property	7.8%	9.4%	6.0%
Incorrigible, runaway	27.9%	17.1%	40.1%
Citations	--	--	--
Juvenile Detained			
Yes	19.1%	25.5%	11.9%
No	80.9%	74.5%	88.1%
Hour of Offense			
8:00 a.m. to 4:00 p.m.	38.5%	37.6%	39.4%
4:01 p.m. to 10:00 p.m.	32.7%	35.4%	29.8%
10:01 p.m. to 7:59 a.m.	28.8%	27.0%	30.7%
Subsequent Complaint			
Yes	78.1%	84.3%	71.0%
No	21.9%	15.7%	29.0%
Average # of Days to Subsequent Complaint (Standard Deviation)	60.8 (79.9)	65.0 (76.9)	56.1 (83.1)
Severity of Alleged Subsequent Offense			
Felony Against Person	2.4%	3.3%	1.1%
Felony Against Property	8.8%	8.3%	9.5%
Hindering Justice	40.0%	49.8%	26.8%
Misdemeanor Against Person	5.0%	5.4%	4.5%
Drugs	5.2%	5.0%	5.6%
Disturbing Peace	8.8%	6.6%	11.7%
Misdemeanor against property	6.2%	4.6%	8.4%
Incorrigible, runaway	23.6%	17.0%	32.4%
Citations	--	--	--

APPENDIX C

INTERVIEW SCHEDULE FOR PROBATION OFFICERS

Probation Officer Risk/Needs Interview Survey

Introductory Statement: *LeCroy & Milligan Associates is conducting a study on the risk/needs assessment instrument for the Arizona Supreme Court. Part of this study is to examine how the instrument is being used by Probation Officers and make recommendations to improve the overall utility of the risk/needs instrument. It is important that you know that all of your responses will be kept strictly confidential and that your name will not appear anywhere on the report.*

1. Have you as a Probation Officer ever completed the risk/needs instrument on a juvenile?

   ___ Yes
   ___ No

2. How often is a risk/needs instrument completed on juveniles assigned to your caseload?

   ___ 0% to 25% of the time
   ___ 26% to 50% of the time
   ___ 51% to 75% of the time
   ___ 76% to 100% of the time

3. Is there a policy (written or unwritten) in your organization mandating that a risk/needs instrument is to be completed on every juvenile?

   ___ Yes
   ___ No

How would you respond to the following statements:

4. I understand how to complete a risk/needs instrument:

   ___Strongly Agree
   ___Agree
   ___Neutral
   ___Disagree
   ___Strongly Disagree

5. I understand the scoring system for the "first referral score" displayed on the 376 screen in JOLTS:

   ___Strongly Agree
   ___Agree
   ___Neutral
   ___Disagree
   ___Strongly Disagree

6. I understand the scoring for the "Post Adjudication Score" displayed on the 376 screen in JOLTS:

   ___Strongly Agree
   ___Agree
   ___Neutral
   ___Disagree
   ___Strongly Disagree

Please Note: *The following questions pertain to the "use" of the risk/needs instrument. The term "use" or "using" makes reference to the risk/needs instrument being "used" for decision making purposes.*

7. Do you as a Probation Officer *use* the risk/needs instrument (not just complete it)?

   ___Yes
   ___No

8. If no, why not?

   _____

   _____

   _____

9. When you have used the risk/needs instrument what kind of role has it played?

   ___Very major role
   ___Major role
   ___Minor role
   ___Very minor role

10. What aspects of the current risk/needs instrument have been most helpful to you?

    _____

    _____

    _____

The least helpful?

_____

_____

_____

11. What, if any, are your concerns in using the instrument?

_____

_____

_____

12. In your work, do you believe the risk/needs instrument has been:

___Very helpful
___Helpful
___Unhelpful
___Very unhelpful

13. Would you make greater use of the risk/needs instrument if it was improved? What improvements do you think should be made?

_____

_____

_____

14. Do you think a risk/needs assessment instrument is more useful for certain groups, for example, older juveniles, felons, violent offenders, than others?

_____

_____

_____

15. Do you have any concerns that the risk/needs instrument might be biased against gender, racial or ethnic groups?

_____

_____

_____

Opinions and attitudes

1. The risk/needs assessment instrument is appropriate for making decisions about the level of supervision.

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

2. The instrument is a helpful tool for the probation officer:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

3. The officer's knowledge is more accurate than the instrument:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

4. I have not received enough training to accurately complete the risk assessment process:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

5. The policies and procedures governing the system are clear and complete:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

6. The process for completing the risk/needs instrument varies greatly between probation officers:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

The following are possible ways risk/needs assessment instruments are useful to probation officers. Please indicate how much you agree with each.

7. The risk/needs instrument replaced a previous report in your unit:

   ___ Yes
   ___ No

   If yes, what has it replaced?

   _____

   _____

   _____

8. Information contained within the risk/needs instrument is referred to when completing reports in our unit:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

9. The risk/needs instrument is useful in identifying high risk offenders:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

10. The risk/needs instrument is useful in providing initial insight about the offender:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

11. The risk/needs instrument is useful in helping officers manage case loads (i.e., allocate their time)

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

12. The risk/needs instrument is useful in making sure high risk cases get intensive supervision:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

13. The risk/needs instrument assures that the offender will get the assistance needed for success:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

14. The risk/needs instrument assures that decisions about risk are uniform state wide:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

15. The risk/needs instrument is useful in helping supervisors evaluate probation officers:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

16. The risk/needs instrument is useful in protecting the probation officer from blame:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

17. The risk/needs instrument is useful in justifying the supervision level to the public or legislature:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

The following are reasons for using the risk/needs instrument. Please indicate how much you agree with each.

18. Overall, the risk/needs system does a good job predicting an offender's likelihood of committing new criminal acts:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

19. The reason why a risk/needs assessment should be used is research has shown these instruments to be effective:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

20. The reason why a risk/needs assessment instrument should be used is that instruments are more accurate than a subjective evaluation of an offender:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

21. The reason why a risk/needs assessment should **not** be used is that the officer's knowledge is more accurate than the instrument:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

22. The reason why a risk/needs assessment should be used is that experienced officers find it makes better decisions than they would:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

23. The reason why a risk/needs assessment should be used is that using the instrument is the professional thing to do:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

24. The reason why a risk/needs assessment should be used is that positive rewards are provided for properly completing the instruments:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

25. The reason why a risk/needs assessment should be used is that negative evaluations are given for failure to properly complete the instruments:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

26. The reason why a risk/needs assessment should be used is that supervisors look more favorable on those who complete the instrument.

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

Finally, please indicate how much you agree with the following statements:

27. Often it is difficult to fill out the instrument due to a lack of reliable information:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

28. When new information is received regarding a juvenile, the risk/needs instrument is updated in the 376 JOLTS screen:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

29. Officers score the instruments **incorrectly** to manage their caseloads:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

30. The amount of supervision I give to a client is **not** determined by the risk score for the client:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

31. The risk/needs assessment instrument is time consuming:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

32. The risk/needs assessment instrument is too confusing to complete:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

33. The risk/needs assessment requires data that are not available:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

34. The system would be better off without the risk/needs assessment instrument:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

Please indicate how much you believe each of the following detracts from successful use of the risk/needs instrument:

35. Lack of information:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

36. Lack of staff training:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

37. Incorrect assessment for some juveniles:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

38. Poor scoring instruments:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

39. Poor policy and procedures:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

40. Excessive officer workloads:

___ Strongly agree
___ Agree
___ Neutral
___ Disagree
___ Strongly disagree

41. Which components of the risk/needs assessment (for example, prior convictions, drug or alcohol use, age at first conviction, client's attitude) do you think most accurately predict the client's level of risk?

42. Have you received any training in how to complete/use the risk/needs assessment instrument?

___ Yes
___ No

If yes, what kind of training and how much?

_____

_____

_____

Thanks for your time!

APPENDIX D

INTERVIEW SCHEDULE FOR JUVENILE COURT JUDGES

Juvenile Risk/Needs Assessment Judges Interview Guide -- 1998

Introduction: We are conducting a study for the *Arizona Supreme Court* that examines the use of the Arizona risk/needs instrument, which is now mandated by statute at first and every referral. As you know the risk/needs instrument is designed to make better predictions about juveniles likely to re-offend. On the basis of a "calculated risk score" juvenile offenders can be classified as low, medium or high risk. This classification is then used to make decisions about the individual. This information is used in determining both risk and need for the juveniles. Judges are a critical part of the process in successfully using such instruments. It is our intent to examine your perspective about such instruments. We have a series of questions to ask you, which should take only 15 to 25 minutes of your time.

1. First of all, do you, as a judge, use information from the risk/needs instrument?

   ___ Yes
   ___ No

2. How often do you use information from the risk/needs instrument?

   ___ In all cases
   ___ In most cases
   ___ In some cases
   ___ In very few cases
   ___ Other, please specify_____

3. How much would you use information from the risk/needs instrument in making a decision in cases? (Probe: What types of decisions?; Does this vary by type of case?)

   _____

   _____

   _____

4. When you have used the risk/needs instrument what kind of role does it play in your decisions?

   ___ Very major role
   ___ Major role
   ___ Minor role
   ___ Very minor role

5. How often have you reached a decision in a case that was different from the level of risk specified by the risk assessment instrument?

   ___ In only a few cases
   ___ Quite a few cases but less than 50%
   ___ A little over half the time
   ___ In almost all the cases

6. When you differ with the classification of the risk assessment instrument do you usually decide that the juvenile is:

   ___ A higher risk
   ___ A lower risk

7. What are the main reasons why you have departed from the classification provided by the risk assessment instrument?

   _____

   _____

   _____

8. Do you feel that the risk assessment instrument unduly restricts the discretion you have to make a decision?

   ___ Yes
   ___ No (If yes, in what way?)

9. At this point in time, do you believe the risk/needs assessment instrument has been:

   ___ Very helpful
   ___ Helpful
   ___ Unhelpful
   ___ Very unhelpful

10. What other factors besides the assessment score do you consider in reaching a decision?

    _____

    _____

    _____

11. Do you believe the use of a risk/needs instrument to help make decisions about juvenile offenders is:

    ___ An excellent idea
    ___ A good idea
    ___ An OK idea
    ___ You have some concerns
    ___ You have major concerns

    (Probe: Ask why to any of the above answers)

12. Are there any improvements with the risk/needs instrument that you think should be made? What are they?

    _____

    _____

    _____

13. In what manner should the risk/needs score be presented to judges?

    ___The entire instrument,
    ___A summary score indicating classification of low, medium or high

    (Probe: Any other ideas concerning how the results can be presented to judges in the most helpful manner?)

14. Do you think a risk/needs assessment instrument is more useful for certain groups, for example, older juveniles, felons, violent offenders, than others?

    _____

    _____

    _____

15. Do you have any concerns that the risk/needs instrument might be biased against gender, racial or ethnic groups?

    _____

    _____

    _____

Section 2: A Survey of Opinions and Attitudes

Now I'd like to ask you a series of questions and just get your response in terms of: strongly agree, agree, neutral, disagree, strongly disagree.

1. Use of objective criteria and risk assessment are the most appropriate manner to make decisions about juvenile offenders. Do you:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

2. The Arizona risk assessment instrument will result in valid identification of juvenile offenders who are at risk for re-offending

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

3. The Arizona needs assessment instrument will result in *valid* identification of need for services:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

4. I sometimes need to override risk assessment scores if there are extenuating circumstances:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

5. The system would be better off *without* the risk/needs instrument:

   ___ Strongly agree
   ___ Agree
   ___ Neutral
   ___ Disagree
   ___ Strongly disagree

Also, I'd like to ask you a few questions concerning your background:

6. How long have you served as a juvenile court judge? _____

7. What percent of time do you devote to juvenile matters? _____

8. What age category best describes you as of your closest birthday?

___ 25 - 35 years
___ 36 - 46 years
___ 47 - 57 years
___ 58 - 68 years
___ 69 years or older

And finally, I'd like to ask if you have any additional comments you'd like to make?

_____

_____

_____

_____

_____

APPENDIX E

SIMPLIFIED SCORING PROCEDURE

Example of the Simplified Scoring Procedure for the Arizona Juvenile Courts Risk/Needs Assessment Instrument (ARNI) - 1st Referral Population

I. Identifying Information

II. Risk Assessment: For each item place the appropriate score in the last column. Once the five items are rated, sum the scores of all five items for the total score. Compare the score to the scoring interpretation to get the likelihood of subsequent complaint.

Risk Assessment Item	Scoring Formula (place appropriate score in next column)	Juvenile's Score
1. Type of offense alleged is a status offense	yes = 1 no = 0	
2. Juvenile's relationship with his/her family involves frequent/intense conflict or is alienated/assaultive (known or suspected)	yes or suspected = 1 no = 0	
3. Juvenile has been assaultive.	Yes or suspected = 1 no = 0	
4. Juvenile used, or is suspected of using drugs within the past year	Yes or suspected = 1 no = 0	
5. Juvenile ever truant or extensive absenteeism from school.	Yes = 1 No = 0	

Scoring Interpretation:

0 = Low risk for subsequent complaint
1-3 = Medium risk for subsequent complaint
4-5 = High risk for subsequent complaint

III. Community Standards

IV. Needs Assessment Domains

Alcohol/Drug Use
Physical, Sexual, Emotional Abuse
Family Functioning
School/Employment Attendance and Behavior
Academic Achievement/Vocational Needs
Mental Health/Emotional Stability (including risk of suicide)
Intellectual Impairment/Learning Disability
Peer Associations/Gang Involvement